

Appendix 1

Issues Identified by Participants in E-Learning Policymaking

Following are issues raised by participants, related to the country they represent, on the 10 components of e-learning policymaking outlined in the UNESCO policymakers' toolkit on ICT integration in national development (see p.25).

Strategic Planning and Vision

Issues

- Lack of strategic planning and vision
- Quality gap between private and public school education
- Lack of awareness of problems and solutions
- No appraisal of available technologies and needs of the country
- Need to identify acceptable changes, cost-effective planning
- Need for strong leadership
- Need to target pilot projects toward developing realistic policies and strategies

Strategies

- Reach consensus on the vision
- Share the vision nationwide; strategies and achievements should be periodically disseminated
- Set up basic ICT infrastructure
- Develop e-learning societies/groups to help planning
- Keep fees for educational use of e-learning, especially in schools, low
- Clearly define agency responsibilities
- Prepare national plans by government and private sector experts jointly
- Provide high-level support to determine priorities and make clear statements

Curriculum and Content

Issues

- Materials are outdated
- Materials may be biased politically
- Little capacity is available to develop content

Strategies

- Create an enabling environment to foster development of local content and local skills
- Set up mechanisms for ongoing reviews of curriculum and content

Use of the Internet and Acceptable Use Policies

Issue

- Lack of computer and language skills to use the Internet effectively

Strategies

- Lower fees and costs to promote use
- Incorporate "firewalls" for control purposes
- Promote private sector involvement and gain tax revenue

ICT and Education Reform

Issues

- Lack of teachers' materials
- Teachers lack time to be (re)trained
- Lack of funds

Strategy

- Provide e-learning materials for teachers

Quality Assurance and Accreditation

Issues

- Standards of quality need to be defined and mechanisms of compliance implemented
- Institutional capacity needs to be matched with work/project requirements

Strategies

- Encourage self-regulation by service providers to avoid excessive government regulation
- Develop regulations that prevent "fly-by-night" providers
- Develop an accreditation scheme for e-learning by a professional body
- Encourage recognition of e-learning by requiring e-learning courses for promotion
- Develop several levels of accreditation, such as certificate, diploma, and degree
- Adopt international standards
- Develop an effective quality assurance and monitoring scheme
- Enforce standards, also in projects and procurement
- Allow accreditation by the private sector for nonformal education; by the public sector for formal education

Connectivity, Infrastructure, and Networks

Issues

- Costs of connectivity and infrastructure are high, especially relative to incomes
- Lack of basic infrastructure (electricity and telecommunications)
- Access should be via a national "backbone"
- Separate networks should be connected
- Need for infrastructure to be secure

Strategies

- Create a national budget to subsidize ICT costs in education
- Public-private partnerships should cooperate with ICT providers

- Allow competition in telecommunication sector to reduce costs
- Introduce Internet protocol networks with multimedia capacity
- Introduce open learning (radio, television)

Professional Development

Issues

- Need for qualified teachers and accreditors
- Need for high-quality ICT instructional material, also in local languages
- Need for training of trainers

Strategies

- Develop a system of continuing education using ICT
- Accept international standards of accreditation

Intellectual Property and Copyright

Issues

- Absence of "cyber" laws
- Lack of enforcement where cyber laws exist
- High costs of some brands of software
- Lack of coordination in implementing agencies
- Emphasis on copyright may reduce sharing of content
- Need for strong enforcement of copyright laws

Strategies

- Copyright to be recognized and registered
- Make government-sponsored development (software, content, etc.) available to the public
- Negotiate an international pricing model based on gross domestic product
- Find solutions based on innovative partnerships/financing models that work in other countries

Intragovernmental Issues

Issues

- Need for political will to enforce compliance regarding usage and licensing
- Need for intergovernment collaboration on enforcement of cyber laws
- Need to develop e-governance
- Uncoordinated ICT projects by different departments may affect development

Strategies

- Develop a strong interdepartmental coordination mechanism in ICT
- Use ICT for information sharing/communication between government departments
- Develop an international (government) portal for sharing information

Cost, Finance, and Partnerships

Issues

- Synergy between donors is needed for optimum deployment of funds
- Sustainability must be guaranteed for investors to become partners in ICT development

Strategies

- Develop and share open-source software
- Develop ICT policies that will attract domestic and overseas investments
- Request development funds from international organizations
- Cover recurring expenses from special grants and earnings from system use
- Encourage private sector funding and participation in projects
- Encourage public-private partnerships to reduce development costs by government

Appendix 2

Draft Action Plans

A Concept Paper : Education Reform in Afghanistan

Abdul Baquee Khogaini

Present Situation

Invasion, civil strife, drought, emigration, and consequent political negligence caused widespread destruction in the country. Schools were burnt, teachers left or were killed and communities were driven out to neighboring countries either by invaders or regime changes. As a result, education has been the last thing on the mind of the Afghans.

The country currently has vast educational needs, including infrastructure, teachers, didactic materials, equipment, libraries, and well-developed curricula. To assess the current situation further, a nationwide needs-assessment survey will be carried out.

To address the gigantic task of meeting the educational needs of 25 million people with 85% illiteracy rate, the Government in making a phased long-term plan, with due attention to the principle of providing equal opportunities to men and women. The phases are

Phase 1: Computerization of 500 high schools and the universities (to enhance computer literacy). This should be done in two stages:

- a. Kabul - 80 high schools
- b. Provinces - 410 schools and 10 universities.

Phase 2: Designing and promoting e-learning policies. The lack of computerization of the educational system and institutions is one of the main hurdles to the social and economic growth of the country. The reform program fits very well in the National Development Framework approved by the Government and is expected to contribute largely to the overall recovery of the country from decades of destruction and rampant lawlessness.

Goal

The project aims to design and establish a modern educational system, using both traditional and computer-based education methods, and ensure its accessibility to all men and women without distinction throughout the country.

Outputs

The results of this project will include rehabilitated infrastructure, trained teachers, distribution of learning materials, new equipment, new libraries, and revised curricula.

The concept of the program is based on the real needs, existence of strong political will, consensus on the prioritization of the education sector, and high demand from the people, especially in urban areas. No problems are foreseen in the provincial phase, except in a number of provinces in the south where the security situation is currently precarious.

Implementation Arrangements

A steering committee composed of delegates from the Ministry of Education, Higher Education and Finance, is to be established to provide overall guidance and direction. The steering committee will be directly responsible to the Minister of Education and will endorse policy decisions proposed by the project management unit.

The project management unit within the ministry of education will oversee the day-to-day activities of the planned reform. It will also be responsible for timely implementation and prioritization of areas where intervention is required. The unit will also have the responsibility of interacting with donors, preparation of recurrent and special reports, and exercising budgetary controls. It will have also the task of building a strong and committed team, including recruitment of experts to help the design and develop cost-effective strategies.

Estimated Budget (US\$ million)

Infrastructure	40.00
Capacity Building	35.00
Expertise	25.00
Total	100.00

Afghanistan will not be able to embark on such an ambitious plan without the assistance of the international community. Currently, more than 50% of its ordinary budget is from outside resources. Therefore, in the present circumstances any cost-sharing arrangement is not thinkable.

Benefits of the Project

The project will benefit a large section of population that has been deprived of its basic right to education. Lack of proper education in Afghanistan is a hurdle not only to the social and economic development of the country but also to a great extent to the nation-building process in which the Government is currently engaged. Without proper education in the country, democratic values will hardly make sense and the efforts of the international community to see a stable and democratic Afghanistan could be lost.

The Establishment and Sustainable Development of Information and Communications Technology for E-Learning in Bangladesh

Md. Didarul Alam

Introduction

The implementation of information technology (IT) is at a very rudimentary stage in Bangladesh. Hence, a study on the information and communications technology (ICT) infrastructure development and e-readiness assessment is of national importance.

The development of ICT infrastructure is a necessary prerequisite to take advantage of the newly emerged global IT revolution. In a survey organized jointly by the Bangladesh Bureau of Statistics and Bangladesh Computer Council in July-September 1998, published in 1999, it was found that computer use increased by 53% during 1995–1997. The survey showed that 41% of computers were used for human resources development, while 12% were connected to the Internet.

Issues

The telecommunications sector in Bangladesh has been characterized by a very low level of penetration, limited capability to meet growing demand, low level of investment, and outdated systems and technologies

In recent years, the Government has liberalized IT policies to enhance mass awareness of IT. Complete withdrawal of tax on computers and computer-related items has created extra enthusiasm among general society through increased participation in computer-based activities, including training and software development. The country expects at least 25% growth per annum in IT spending, preferably with state support. Major investments, especially in collaboration with foreign firms, are being encouraged toward creating a world-class industry and IT professional services sector.

In order to develop a sound national telecommunication infrastructure to support the economy and welfare of the country by providing telecommunication facilities on demand and assure the people of satisfactory quality of service, the needs are to

- establish a modern and advanced training facility for public and private executives, planners, implementers, academicians, and researchers;
- enhance teaching and research capabilities to cope with technological demand in the 21st century;
- assist programs toward further development of human resources and the technological sector; and
- develop an efficient ICT infrastructure that provides open access to international and national networks.

Project Framework

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal Establishment and sustainable improvement in the ICT Sector for e-learning</p>	<ul style="list-style-type: none"> • Measurable improvements in ICT infrastructure, establishment of hardware and software support • Increase in the literacy rate • Increase in trained people in the IT sector • Time savings, especially for researchers, from improved access to IT 	<p>Project research, case studies and impact assessment report</p> <p>Yearly report published by Bureau of Statistics</p> <p>Other secondary reports on ICT</p>	
<p>Purpose Establishment of ICT</p> <p>Sustainable improvement in existing ICT</p>	<ul style="list-style-type: none"> • Building a strong infrastructure for fulfilling basic hardware needs for e-learning • More local institutions using low-cost and community communication system for mass e-learning • Existence of functional ICT system for e-learning projects • More people by gender, age, vulnerability, and socioeconomic status using ICT facilities for learning • More people have access to ICT for reading and learning • More use of appropriate technology by people for improved learning 	<p>Purpose review reports</p> <p>Ministry of Education evaluation reports</p> <p>Project mid-term evaluation report</p> <p>Community survey reports</p> <p>Yearly report of the Bureau of Statistics</p>	<p>Government policy allows nongovernment and other organizations to promote ICT</p> <p>Government and donors continue to provide financial support to agencies working to improve ICT</p> <p>Local government organizations and local NGOs work together</p>

Project Framework (cont'd.)

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Output 1 Enhanced institutional ICT-related technology</p>	<ul style="list-style-type: none"> • Improved norms, policy, and systems exist on ICT • Information Ministry, Education Ministry, and local NGOs, are responsive to the needs and priority • More staff with strong understanding and skills on infrastructure planning, implementation, monitoring, and reporting on ICT • Community, local institutions, and NGOs design, implement, and evaluate e-learning programs • Increased satisfaction of people using IT 	<p>Reports of the Ministry of Education and Ministry of Information</p> <p>Donors' project implementation reports</p> <p>Purpose review reports</p> <p>Ministry of Education project monitoring reports</p> <p>Workshop reports/ meeting proceedings</p>	<p>Government and donor policies do not change, hindering ICT development</p>
<p>Output 2 Improved e-learning and IT awareness and use in the community</p>	<ul style="list-style-type: none"> • More self-motivated social leaders, promoters, and groups campaigning for use of a mass communication system for reading and learning • 95% of target people are aware of importance of using ICT for learning • 95% of the target people are using IT • Increased expenditure by target groups on e-communication 	<p>Ministry of Education quarterly progress reports</p> <p>Annual or Quarterly Ministry of Education project implementation and review report</p> <p>Output to Purpose Review reports</p> <p>ICT practice survey reports Yearly report published by Bureau of Statistics</p>	<p>Some government agencies may not give full cooperation</p>

ICT = information and communications technology; IT = information technology, NGO = nongovernment organization.

Key Project Inputs

- 1 Conduct training and workshops for government agencies, development partners, institutional representatives, and others directly involved in this project to establish an ICT infrastructure.
 - 2 Conduct meetings, identify volunteers, catalysts, and social engineers, and encourage them to work on establishing an ICT infrastructure.
 - 3 Create informal female and male groups to work with the targeted government and donor agencies regarding maintenance of an ICT infrastructure.
 - 4 Agencies responsible work to improve student services, courses, bookstores, library support, standards, guidelines related to hardware, software, and other relevant technologies required for e-learning.
 - 5 Establishment of full support for online and offline resources for e-learning, and for a telecommunication structure dedicated to e-learning.
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ICT = information and communications technology.

Benefits of the Project

- Increased literacy rate.
- More effective linkages between skilled and unskilled people.
- More awareness and e-readiness due to improved information infrastructure.
- Further development of the IT market.
- Large-scale human resource development through e-readiness and e-learning.
- Support of the education of students who have difficulties in being physically present at educational institutions; for example, disabled students and full-time working students.
- Reduced costs in educational institutions by using virtual instead of physical classrooms.
- Standardization among research groups and companies through e-communication.

Cost Estimates and Financing Plan (US\$ million)

Item	Costs			Source of Funds		
	Year 1	Year 2	Year 3	Government	Donors	Total
1. Consultants						
a. International Consultants	1.60	0.80	0.60	0	3.00	3.00
b. Domestic Consultants	0.50	0.30	0.20	0	1.00	1.00
Subtotal	2.10	1.10	0.80	0	4.00	4.00
2. Equipment and Software						
a. Equipment	20.00	4.00	1.00	0	25.00	25.00
b. Software	1.50	0.50	0	0	2.00	2.00
Subtotal	21.50	4.50	1.00	0	27.00	27.00
3. Buildings and Furniture						
a. Buildings	4.50	0.50	0	5.00	0	5.00
b. Furniture	0.40	0.05	0.05	0.50	0	0.50
Subtotal	4.90	0.55	0.05	5.50	0	5.50
4. Training, Seminars, and Conferences	1.00	0.25	0.25	0.50	1.00	1.50
5. Research, Development, and Surveys	1.00	0.50	0.50	0	2.00	2.00
6. Administration and Support Costs	0.25	0.25	0.25	0.75	0	0.75
7. Contingencies	0.15	0.10	0	0.25	0	0.25
Total	30.90	7.25	2.85	7.00	34.00	41.00

Source: Participant's estimates.

Building an E-Learning/E-Governance Resource Center in Bangladesh

M Badrul Arefin

Introduction

In a developing country like Bangladesh where resources are scarce, learning is becoming more targeted and traditional learning programs, especially distant learning, are gradually being replaced by modular flexible programs focused on specific needs using the most appropriate technology. The issues involved in this project and its benefits are similar to those mentioned in the previous draft action plan to develop ICT in Bangladesh.

Framework

A resource center in e-learning and e-governance would conduct training and workshops for government agencies, development partners, institutional representatives, and others. It would provide a knowledge-based implementing and monitoring mechanism for automation processes in different ministries and public services. It would work as the core of most ICT initiatives in the country.

The center would conduct meetings and identify volunteers, catalysts, and social engineers and encourage them to work on establishing e-governance, development of various fields of e-learning, and policies for the development of the ICT structure.

The ICT framework could be maintained by forming informal/semiformal female and male groups for this purpose in government and private sector agencies and nongovernment organizations (NGOs). The agencies responsible would work to improve services, courses, bookstores, library support, standards, and guidelines related to hardware, software, and other technologies required for e-learning and e-governance.

Developing A Distance Education Center at the Bhutan National Institute of Education

Thubten Gyatshho

Introduction

After rapid expansion of schools due to government priority in the early 1960s, many teachers were inducted into the system. Some received little initial training while others did not receive any at all. Prior to 1995, in-service training was very rare and the teachers who had received initial training continued to teach with whatever training they had received. This led to stagnation in the teaching service. There was an assortment of teachers with varying levels of qualification and it was inevitable that questions on quality of education were raised. There are only two institutes offering teacher training programs in Bhutan. In both, a 3-year Bachelor's degree program in education is conducted on a regular basis. However, the National Institute of Education (NIE) in Samtse is now offering 5-year distance education program to in-service teachers.

Since the inception of the NIE program, 45 teachers graduated in December 2003, while 230 are enrolled in the program at various levels in 2004. A number of in-service teachers have applied for the course. The International Development Research Centre of Canada has funded a project to link NIE with regional centers through the Internet. A web site is being developed. Pilot testing of the project will be carried out in January 2005.

Issues

1. Human Resource Requirements

- a. Teaching Staff. The distance education program currently offers about 60 course modules of 45–60 hours of study each. There are 34 module tutors involved of whom 13 are from outside the institute faculty. Each of these tutors has 3–4 modules in addition to their internal teaching load. This has adversely affected the quality of the distance program. Tutors not only have to struggle with the delivery of course modules but also they have to put together the learning materials. Student

numbers, both internal and external, have increased enormously over the last few years with little or no change in teaching staff numbers.

- b. Support Staff. In the next few years, much of the learning support is expected to be web-based and management and record keeping will mainly be computerized. The system will require a network administrator capable of providing maintenance and helping tutors to provide web-based supplementary reading materials and interaction with students.

2. Quality of Learning Materials

Currently, all materials in use are products of individuals who had little or no earlier experience of such work. Time and resource constraints hinder development of appropriate software for design and development of course materials. Delivery is print-based, supplemented by a compulsory residential period of one month at the beginning of each level. During the residential school, orientation, tutorials, and learning materials are provided.

3. Quality of Learning

Although the present delivery method can be effective, other media can enhance the quality of learning, such as audio-visual supplementary learning.

4. Library Facilities

Distance learners have access to library facilities only during their residential period. Computerizing the library system at NIE with access to distance learners through the Internet would be of great help. Also, other library resources, such as databases, encyclopedias, and books in electronic forms are needed to help the distance learners.

Purpose

The overall goal for the proposed project is to develop appropriate and suitable distance education system to improve the quality of primary and secondary education through computer-mediated

communication. To achieve this goal, there is urgent need to establish a separate unit in the Institute with the following objectives.

- To foster independent and life-long learning through ICT.
- To facilitate the establishment of links with regional centers, educational institutions, the Ministry of Education, and between Bhutan and the world.
- To review and revise the existing curriculum.
- To convert print-based material to online files.
- To train faculty and support staff.

Outputs

The results of the project would include new infrastructure, trained faculty and support staff, a computerized library, revised curricula, and technology to make audio-visual materials.

Implementation Arrangements

The Ministry of Education, through a project management committee, would provide overall guidance. The committee would consist of representatives from the donor agency, Ministry of Education, Ministry of Finance, and NIE.

Cost Estimates (\$US million)

Building and furniture	2.50
Equipment and software	2.00
Training, seminars, conferences	1.00
Research and development	1.50
Consultancy	0.50
Total	7.50

Benefits of the Project

The project would not only help to improve the delivery of distance education but also help to provide continuous education to school dropouts, pre-service teachers, and nonformal learners. It would also provide a team of specialized personnel in distance education to develop curricula and provide learning support to distant learners, and who could act as trainers of trainers in future curriculum development.

Enhancing Education Service Delivery through the Application of Information and Communications Technology in Cambodia

Sok Tha and Borith Tong

Introduction

The Ministry of Education, Youth and Sport (MoEYS) in Cambodia is engaged in fundamental reform through a sector-wide approach. The reform process is being guided by the Education Strategic Plan (ESP) 2004–2008 and implemented through the rolling Education Sector Support Program (ESSP). The Ministry has led the development of the Royal Government of Cambodia's National Education for All (EFA) Plan 2003–2015, which was presented to and adopted by the Government in April 2003.

Both these key policy and strategy documents articulate a phased strategy for expanding ICT-based education management and delivery programs. ICT use in education strategies is guided by government policies, which include using ICT to enable economic growth and assist in modernizing public services. The ministry is currently finalizing policies for ICT in education, drawing on extensive stakeholder consultation and situation analysis. Briefly, the objectives of these draft policies are to link education services with the modern economy, use ICT as a strategy for improving education service delivery, and use ICT as a strategy for decentralizing the management of education services.

Issues

There are a number of challenges for Cambodia in reducing the digital gap through public funded education alone, particularly due to competition for limited resources, infrastructure constraints, and the low exposure to ICT for the majority of Cambodians. The key challenges are low connectivity and ICT penetration in schools, little use of e-mail and the Internet, competition for resources, and weak communications infrastructure.

Purpose

The overarching purpose of the project will be to assist MoEYS in achieving its ICT policy objectives and implementation plans as laid down in the ESP 2004–2008:

- Improving Cambodia's international competitiveness by reducing the technology gap with more developed countries through increased student and staff exposure to ICT.
- Enhancing learning opportunities within schools and other institutions through the utilization of ICT and multimedia to complement traditional learning materials and techniques, alongside curriculum development and teacher training.
- Streamlining and enhancing decentralized education service planning and management through expanding access to, and use of, ICT in provincial and regional education offices.

Outputs

- Improved capacity within MoEYS to manage ICT-based policy, strategy, and program development and implementation.
- Improved capability within the National Institute of Education (NIE) and regional teacher training centers (RTTCs) to manage the delivery of ICT-based teacher development and secondary school programs.
- Enhanced quality of teacher education and upper secondary school programs through application of ICT-based curriculum support programs.
- Increased effectiveness of provincial and district education service planning and management through application of ICT-based management information systems.

The program will develop management capacity within the Teacher Training and ASEAN Affairs and Information departments to enable the development of ICT resources for use in teacher training institutions and upper secondary schools. This work will be done in close consultation with stakeholders and curriculum development departments such as the Pedagogical Research Department.

Cost Estimates (US\$)

It is anticipated that the intervention will take the form of a rolling program over 5 years, with yearly updates to the strategy as priorities emerge and as a result of joint ESSP review outcomes.

Item	Cost (US\$)
1. Human Resources	
a. Output-based Payments	30,000
b. Technical Assistance	300,000
c. MoEYS Per Diems for Missions/Travel	20,000
Subtotal	350,000
2. Travel	
a. International Travel	15,000
b. Regional Travel for MoEYS Study Visits	7,000
c. Local Transport for MoEYS Monitoring in Provinces	5,000
Subtotal	27,000
3. Equipment and Supplies	
a. Computer Laboratories for Teacher Training Colleges	250,000
b. Computer Laboratories for Upper Secondary Schools	3,000,000
c. Database and Software	3,000
d. Computers	370,000
e. Internet Access	37,000
f. Solar Power	300,000
Subtotal	3,960,000
4. Program Operating Costs	
a. MoEYS Office Consumables	8,000
b. Other Consumables	4,500
Subtotal	12,500
5. Other Costs, Services	
a. Workshops	4,000
b. Publications	4,000
c. Dissemination Costs	2,000
d. Multimedia Content Production/Sourcing, Students	17,100
e. Multimedia Content Production/Sourcing, Teachers	10,000
f. Software Installation Costs	4,000
g. MoEYS Staff Training in Web Design/Applications	4,000
h. MoEYS Staff Training in Database/Information System Design and Management	4,000
i. MoEYS Staff Training in Network Administration	4,000
j. MoEYS Staff Training in Computer Maintenance	3,500
k. IT Literacy Training	18,500
Subtotal	75,100
Total	4,424,600

IT = information technology, MoEYS = Ministry of Education, Youth and Sports.

Source: Participant's estimates.

Benefits of the Project

The program has been designed to support MoEYS medium-term policy objectives within the ESP 2004–08 and longer-term EFA goals. The target groups identified in the proposal range across all levels of the education sector. The program will provide benefits for MoEYS management development, teacher trainers, trainee teachers, and ultimately upper secondary school students.

Details of the project framework are given in the following pages.

Project Framework

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
Overall Objectives	To enable MoEYS to achieve ICT policy objectives laid down in its current five-year ESP	<p>Improvement in international competitiveness by reducing the technology gap through increased student and staff exposure to ICT</p> <p>Enhancing learning opportunities within schools and other institutions through ICT to complement traditional learning materials and techniques, along with curriculum development and teacher training</p> <p>Streamlining and enhancing decentralized education service planning and management through expanding access to, and use of, ICT in provincial and regional education offices</p>	<p>Independent reports by NIDA and CDC</p> <p>6-monthly reports produced by program steering and monitoring team</p> <p>6-monthly reports produced by program steering and monitoring team</p>	<p>Appropriate policy action by Government to promote and enable ICT-based economic growth</p> <p>Effective partnership arrangements between MoEYS and development partners</p> <p>Administrative reforms in place to enable effective use of ICT</p>
Project Purpose	To assist the Royal Government of Cambodia in achieving goals laid down in the EFA National Plan	<p>Expansion of access to ICT-based service delivery in 7 TTCs and subsequent extension to 50% (around 100) upper secondary schools</p> <p>Teacher training and upper secondary curriculum and program quality enhanced</p>	<p>6-monthly program implementation reports by steering and monitoring team</p> <p>6-monthly program implementation reports by TTD</p>	Timely formulation of detailed ICT strategic and program priorities within EFA plan

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Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
	<p>through the utilization and development of ICT in education, particularly in enhancing upper secondary education and decentralized education management</p>	<p>Enhanced capacity within the central MoEYS for ICT policy and strategy development and its monitoring</p> <p>Improved capability at the institutional level for managing and implementing ICT-based service delivery improved capability at provincial and district levels to utilize ICT for planning and managing education services</p>	<p>6-monthly progress reports by EFA secretariat monitoring team</p> <p>Regular electronic program and financial monitoring reports from DEOs to PEDs to headquarters</p>	<p>Timely formulation and approval of ICT components of revised curricula</p> <p>Timely formulation and approval of program-related capacity building plans and staff deployment</p>
Expected Results	<p>Improved capacity within MoEYS to manage ICT-based policy, strategy, and program development and implementation, including the following:</p>	<p>Within the TTD and Information and ASEAN Affairs Department, and staff and subsidiary staff in 5 MoEYS departments, the following are developed:</p> <ul style="list-style-type: none"> • Enhanced capacity to further develop ICT policy within education • Enhanced levels of communication and coordination between the departments to ensure effective technical ICT skills transfer to training institutions • Technical capacity developed among central staff for the continued maintenance and development of developed systems 	<p>6-monthly impact and progress reports from the following sources:</p> <ul style="list-style-type: none"> • Project steering and monitoring team • EFA secretariat • Department of Information and ASEAN Affairs • Department of Teacher Training • Department of Secondary Education • Department of Personnel 	<p>Timely recruitment, appointment and retention of qualified MoEYS staff</p> <p>MoEYS operational budget support secured in annual MoEYS budget plan</p> <p>Timely completion of initial curriculum and teacher development plan</p>

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Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
		<ul style="list-style-type: none"> • Technical and analytical capacity among central staff for the sourcing and review of potential ICT resources • Technical capacity developed among central staff to identify potential multimedia solutions for supporting the teacher training and upper secondary curriculum and develop these solutions 	<ul style="list-style-type: none"> • Department of Planning • Department of Finance 	<p>Effective partnership arrangements between MoEYS and development partners</p>
<ul style="list-style-type: none"> • Improved capability within NIE and RTTCs to field manage the delivery of ICT-based teacher development and secondary school programs 	<p>Professional capacity of 110 NIE teacher trainers to deliver training enhanced</p> <p>Teacher trainers have access to ICT information systems</p> <p>Core skills of 110 NIE teacher trainers enhanced through increased use of ICT. Teacher trainers have the capacity to facilitate the use of ICT information system by trainees</p> <p>Professional capacity of 533 upper secondary school teacher graduates to deliver curriculum enhanced</p>	<p>6-monthly impact and progress reports from the following sources:</p> <ul style="list-style-type: none"> • Project steering and monitoring team • EFA Secretariat • Department of Information and ASEAN Affairs • Department of Teacher Training • NIE and 6 RTTCs • Beneficiary questionnaires and sample interviews • Sample surveys by PEDs 	<p>Timely recruitment, appointment, and retention of qualified teacher training staff</p> <p>NIE and RTTC operational budget support secured in annual MoEYS budget plan</p> <p>Timely completion of initial curriculum and teacher development plan and agreement on release of staff for training</p>	

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Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
	<ul style="list-style-type: none"> Improved quality of teacher education and upper secondary school programs through application of ICT based curriculum support programs 	<p>Graduates able to draw on ICT resources via proposed information system to enhance the delivery of school curriculum</p> <p>Graduates able to facilitate ICT skills development in students via the broad curriculum and specific ICT components</p>		
	<ul style="list-style-type: none"> 148,000 students enrolled in 50% of upper secondary schools in Cambodia have access to ICT based curriculum support 148,000 students have a broadened and deepened understanding of the curriculum through enhanced delivery using ICT and of how ICT can be used 533 teacher trainees self-study opportunities increased through provision of ICT information system Core skills of 110 teacher trainers enhanced through increased use of ICT Broadened and deepened understanding of teaching methods and specific curriculum teaching through use of ICT resources for 533 teacher trainees 	<ul style="list-style-type: none"> 6-monthly impact and progress reports from the following sources: <ul style="list-style-type: none"> Project steering and monitoring team EFA secretariat Department of Information and ASEAN Affairs Department of Teacher Training Department of Secondary Education Faculty of Pedagogy and 6 RTTCs 	<p>Timely release of NIE, RTTC, and secondary school operational budgets to supplement project activities</p> <p>Commitment of staff and students to deliver and attend programs, respectively</p> <p>Timely revision of TTC and school timetable to provide sufficient time for ICT curriculum support</p>	

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Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
	<ul style="list-style-type: none"> Improved effectiveness of provincial and district education service planning and management through application of ICT-based management information systems 	<p>24 PEDs and 185 DEOs have sustainable access to ICT resources, including the Internet</p> <p>MoEYS web server and mail server implemented and providing Internet and e-mail gateways for PEDs, DEOs, institutions, and schools</p> <p>24 PEDs and 185 DEOs have access to core management information systems, including ERMIS, and financial, personnel, and facilities MIS</p>	<ul style="list-style-type: none"> Beneficiary questionnaires and sample interviews Sample surveys by PEDs <p>All PEDs and DEOs use resources to create and send electronic reports</p> <p>All online offices, institutions, and schools are able to contact central offices via e-mail</p> <p>6-monthly impact reports by relevant offices on the use of associated information for office functions</p>	<p>Timely recruitment, appointment, and retention of qualified provincial and district staff</p> <p>PED and DEO operational budget support secured in annual MoEYS budget plan</p> <p>Timely formulation and approval of program-related capacity-building plans and delivery of information system</p>
<p>Activities - Enhancing learning opportunities within schools and other institutions</p>	<p>Series of stakeholder consultations/workshops</p>	<p>Workshops take place with broad stakeholder participation</p> <p>Reports produced detailing out comes of workshops</p>	<p>Consolidated workshop report received by all stakeholders</p>	<p>For all activities:</p> <ul style="list-style-type: none"> Timely recruitment, appointment, and retention of qualified MoEYS staff

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Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
	Development of specifications and investigative framework	Investigative framework and list of specifications, informed by stakeholder workshops, approved by program steering group	Investigative framework and specifications paper approved by steering group Multimedia tools tested and approved by range of stakeholders	<ul style="list-style-type: none"> MoEYS operational budget support secured in annual MoEYS budget plan Timely completion of initial curriculum and teacher development plan
	Development of multimedia resources	A comprehensive range of curriculum support tools is available in English and Khmer, consistent with investigative framework and specifications	Program monitoring reports, Department of Material and State Properties report	<ul style="list-style-type: none"> Effective partnership arrangements between MoEYS and development partners Timely recruitment, appointment, and retention of qualified teacher training staff NIE and RTTC
	Provision of computer laboratories in training institutions	Computers installed in a suitable environment, networked, consistent with specifications, in NIE and each RTTC	Program monitoring reports, Department of Material and State Properties report	<ul style="list-style-type: none"> Timely recruitment, appointment, and retention of qualified teacher training staff NIE and RTTC
	Provision of computer laboratories in upper secondary schools	Computers installed in a suitable environment, networked, consistent with specifications, in targeted schools	Program monitoring reports, Department of Material and State Properties report	<ul style="list-style-type: none"> operational budget support secured in annual MoEYS budget plan
	Development of education resource management information system (ERMIS)	MIS developed, tested, and approved by steering group, consistent with specifications, and containing multimedia resources	ERMIS tools tested and approved by range of stakeholders	

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Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
	<p>Implementation of ERMIS</p> <p>Capacity building and training</p>	<p>Teacher trainers, trainees, and students using ERMIS in computer laboratories in institutions</p> <p>Teacher trainers, trainees, and students are able to use the ERMIS within computer labs in institutions</p>	<p>Monitoring reports (including by EFA secretariat, NIDA, and CDC)</p> <p>Attendance records, monitoring reports (including by EFA secretariat, NIDA, and CDC)</p>	
Activities - Enhanced decentralized education service planning and management	<p>Provision of equipment to all DEOs</p> <p>Provision of solar power to DEOs:</p> <p>Capacity building of DEO staff</p>	<p>Computers installed in each DEO, consistent with specifications</p> <p>Computers and printers can be used continuously</p> <p>DEOs are able to use computers and information systems</p>	<p>PED monitoring reports, program monitoring reports, Department of Material and State Properties report</p> <p>Monitoring reports (including by EFA secretariat, NIDA, and CDC)</p> <p>Attendance records, monitoring reports (including by EFA secretariat, NIDA, and CDC)</p>	

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Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
	<p>Phased implementation of district information systems</p> <p>Provision of Internet access</p>	<p>DEOs make use of information system for planning and monitoring (including financial)</p> <p>Regular e-mails sent and received between central/provincial education offices and district education offices</p>	<p>Improved timeliness and accuracy of district reporting PED monitoring</p> <p>Offices regularly receive information and communication via e-mail</p> <p>Monitoring reports (including by EFA secretariat, NIDA, and CDC)</p>	

ASEAN = Association of Southeast Asian Nations, CDC = Cambodia Development Committee, DEO = District Education Office, EFA = Education for All, ERMIS = education resource management information system, ESP = Education Strategic Plan, HQ = headquarters, ICT = information and communications technology, MIS = management information system, MoEYS = Ministry of Education, Youth and Sports, NIDA = National Information and Communication Technology Development Agency, NIE = National Institute of Education, PED = Provincial Education Department, RTTC = regional teacher training center, TTC = teacher training college, TTD = Teacher Training Department.

Improve Education and Sustain Development in Western China through Information and Communications Technology

Guohua Yan and Zhang Xuemei

Introduction

Investments in education and related applications of distance education are an essential part of the "go west" strategy and government efforts to reduce poverty in the western region of the People's Republic of China (PRC). Education is essential to provide people with the tools to escape poverty. During the PRC country programming mission in June 2002, the Government requested ways to use distance education and an advisory technical assistance to support distance education by identifying information and communications technology (ICT) applications in education more effectively.

The "Modern Distance Education Training Program for Middle and Primary Schools in the Western Region" is part of the "Modern Distance Education Program for Poverty Alleviation" project implemented by the Ministry of Education in cooperation with the Li Ka-Shing Foundation. Its purpose is to establish 10,000 modern distance-education exemplary schools on the basis of some of the middle and primary schools in rural areas of national-level poverty-stricken counties in the western region of China; to receive information at these schools from the satellite broadband multimedia transmission platform of the China Education Television; to allow Internet offline browsing; to provide possibilities for schools and teachers to receive training and education locally and acquire rich educational resources, in order to promote the implementation of Nine-Year Compulsory Education, and improve quality of teaching; and in turn, to make the schools disseminators of applied technologies for rural use, economic information, and civilized life style to communities.

The program has made important progress. First, we have initially built 15,000 exemplary schools in Xinjiang, Tibet, Qinghai, Gansu, Ningxia, Shaanxi, Inner Mongolia, Yunnan, Guizhou, Sichuan, Chongqing, Guangxi, and poverty-stricken counties such as Tujia Nationality Autonomous Prefecture in the west of Hunan, Tujia Nationality Autonomous Prefecture in the west of Hubei, and Yanbian

Korean Nationality Autonomous Prefecture. Second, the national institution responsible for program implementation developed textbooks for teacher training and trained 160 leading program technicians at provincial and county levels. Third, we have established 14 teacher training centers in a network composed of 14 universities in the western region, which have trained 15,000 teachers and technical maintenance staff for the first stage of the program. Fourth, the Education Resource Center of the National Center for Educational Technology initiated an Internet protocol channel serving this program.

Issues

Many teachers in the compulsory system lack the qualification and training required to meet the ongoing curriculum reform and the Government's targets for teacher upgrading. Particularly in the western region, many teachers need to upgrade their credentials to meet officially required qualification levels; many more require periodic support to update their skills and approaches. While the decentralization policy has led to increased investments in better-off areas of the PRC, it has put tremendous pressure on the poor regions where local resources are limited and the education indicators (teachers; instructional materials; physical inputs; and enrollment, attendance, drop-out, and completion rates) lag behind the national average. The quality of basic education and poverty level of households are two major factors associated with student dropouts in basic education. These factors are intertwined and reinforce the need to improve education inputs in poorer areas.

Progress is needed in qualitative as well as quantitative terms. In addition to formal certification, teachers need skills and tools to adopt new approaches to nurture pupils' creativity, problem-solving ability, and collaborative learning skills. Empowering teachers to innovate, moving away from exam-focused rote instruction, will require creating support among headmasters and local educational officials, as well as effective networking mechanisms between them. To achieve universal compulsory education, special arrangements are needed to redress educational inequities (access, teacher quality, instructional materials, and physical conditions) in the poor areas and among disadvantaged communities. This project will support applications of distance education and other forms of ICT, and is primarily intended to reduce east-west and urban-rural gaps.

Based on the mid-term evaluation report of the Li Ka-Shing project, focus should be given to the training of program managers. Practice demonstrated that the commitment to and active participation in the program of local education administrators and headmaster of middle and primary schools will play a decisive role in the success of the program. Training of county-level program managers and headmasters of program schools can further expand the influence of the program, help to make full use of teacher training, and encourage teachers to participate in the program, thus improving the value of the program.

The Government wants to explore the use of ICT in education in three areas: (i) development of courses focusing on ICT as part of the national school curriculum; (ii) broader use of distance education applications, especially in higher education; and (iii) applications of ICT to reduce poverty, particularly in the western region. The Government has expressed great interest in the use of ICT to provide high-quality content (i.e., training programs and information resources) to teachers, and has noted that the same tools can also provide practical materials to communities to promote local development.

Experience from different forms of ICT application in the PRC points to three major and urgent needs: (i) development of educational materials to enhance the use of hardware; (ii) provision of training to teachers who have not been exposed to ICT, to allow them to use ICT effectively; and (iii) provision of hardware to many areas that either do not have the equipment or need more equipment. There is also a need to support innovative practices to demonstrate how technologies could be used more cost effectively.

Distance education and ICT applications provide new opportunities to address the need for training a large number of teachers, developing instructional materials to address diverse needs of disadvantaged children in the western region, and improving the access of disadvantaged children to quality compulsory education. Effective inter-institutional linkages and coordination are needed to support research, evaluation, school-level innovation, and educational management. Teachers, students, and communities need training to prepare them to respond to new opportunities and challenges posed by economic restructuring and the PRC's entry into the World Trade Organization.

Proposed Project Objectives

This action plan is based on an existing ADB pilot project in Hunan Province, with the intention of expanding the results to another 12 provinces.

The aim of the project is to advance policy dialogue on particular applications of distance education and ICT in the western region in order to improve quality and equity in basic education, and to enhance teacher and administrator capacity building and sustainable development. This aim is in line with government priorities and initiatives for developing poor regions of the country.

The project has four main objectives:

- To establish multipurpose, well-functioning ICT centers for professional development of teachers and for community use (to support rural education for farmers, vocational education for young people, and to meet information needs).
- To implement a small-scale, well-researched project (including a study of costs and sustainability) which helps to inform policy dialogue.
- To add value to existing ICT facilities and capacity by
 - (i) building on the initiatives of the Li Ka-Shing project, through enhancing the equipment available at Li Ka-Shing centers to increase access and range of functions;
 - (ii) developing an effective training model for teachers, headmasters, center coordinators, and teacher-trainers in the use of ICT for education;
 - (iii) developing stronger e-connectivity as a means of supporting innovations in the use of ICT (online interaction between teachers and schools; web-based projects; active web sites);
 - (iv) improving the management of ICT centers and strengthening county-level capacity in supporting uses of ICT; and
 - (v) integrating the use of ICT into teacher education and the school curriculum.
- To develop and test outcomes-based standards in ICT (for teachers and centers).

Intended Outcomes

The project will provide a small number of well-functioning multipurpose ICT centers in poor rural and mountainous areas that

- assist teachers' and headmasters' professional development through increased access to new information, databases, and discussion groups;
- enable affordable interaction and networking with others for information exchange and joint project work;
- demonstrate the viability of connectivity for educational purposes in rural and poor areas;
- initiate community services (e.g., for farmers' training or vocational training);
- foster local cultures through special projects using multimedia; and
- are sustainable.

The project will also enable a research base that

- provides information and conclusions on costs and sustainability for use by policymakers and planners;
- assesses the effectiveness of the project in relation to the goals;
- builds local capacity in researching ICT, teacher training, and collaborative action research;
- identifies and disseminates relevant lessons for use in planning a larger-scale project or for more general application; and
- produces an evaluated model for training in the use of ICT in improving teacher quality.

Methodology and Key Activities

First, a rapid assessment will be made of distance education and ICT applications in education in supporting universal compulsory education, literacy interventions, and related programs. The rapid assessment will provide a general background on where the PRC stands on ICT applications; the current situation in poor areas compared to better-off areas; what has been done, including external assistance, to address the needs of disadvantaged communities in particular; the major constraints in terms of teaching and learning; and the implications of ICT in addressing equitable access to quality basic education, including its potential for upgrading teacher qualification and skills and student learning.

The key activities are building ICT resource centers; teacher, headmaster, and administrator training; and evaluation and research.

Cost Estimates and Financing Plan (US\$ million)

Item	Government Share	Donor Share	Total Cost
1. Consultants			
a. International Consultants	0.00	0.10	0.10
b. Domestic Consultants	0.00	0.05	0.05
2. Equipment and Software			
a. Equipment	0.02	0.04	0.06
b. Software	0.01	0.01	0.02
c. Teaching Resources	0.10	0.10	0.20
3. Buildings and Furniture			
a. Buildings	0.50	0.00	0.50
b. Furniture	0.01	0.00	0.01
4. Training, Seminars, and Conferences	0.10	0.40	0.50
5. Research, Development, and Surveys	0.00	0.30	0.30
6. Miscellaneous Administration and Support Costs	0.20	0.10	0.30
7. Contingencies	0.10	0.10	0.20
Total	1.04	1.20	2.24

Source: Participant's estimates.

Implementation Arrangements

The Ministry of Education will establish a steering committee, which will provide overall guidance and technical inputs to the technical assistance, and help organize workshops in partnership with interested national and international agencies. Research, seminars, and workshops will be undertaken in partnership with other agencies as appropriate and to the extent possible. Twelve provinces in the western region are to be selected. In each province, two counties will be chosen for project implementation. In each county, five schools will be selected. The project will be implemented over a five-year period.

Benefits of the Project

The project has huge practical and strategic significance. It is an important measure to explore ways to achieve great progress in education in poor areas. Also, it will have a strong influence on changing educational and teaching perceptions and improving the ability of teachers. In addition, it will enhance capacity building and sustain development in western PRC.

Project Framework

Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal Advance human development with improved access to quality primary and secondary education, particularly among disadvantaged populations, through targeted and viable applications of distance education and ICT</p>	<p>Improved access to quality, universal compulsory education (grades 1–9) and secondary education</p>	<p>National statistics; education survey; labor market survey</p>	<p>The Government continues to increase its effort to ensure universal access to quality compulsory education in the poor areas of the western region</p>
<p>Purpose</p> <ul style="list-style-type: none"> Identify strategies to advance policy dialogue on targeted and viable applications of distance education and ICT to improve quality and equity in targeting of basic education Support applications of distance education and ICT for compulsory education in poor areas of the western region 	<ul style="list-style-type: none"> Distance education and ICT strategies to improve coverage and quality of learning identified; and to improve efficiency and management of compulsory education Promising and viable distance education and ICT applications identified and implemented through a network of partnerships 	<ul style="list-style-type: none"> Assessment of ongoing distance education and ICT programs TA evaluation report: Annual budget allocation Ministry of Education annual monitoring Universal compulsory education reports 	
<p>Outputs Rapid assessment</p>	<ul style="list-style-type: none"> Rapid assessment report two months after startup 	<ul style="list-style-type: none"> TA reports Consultants' reports TA monitoring reports 	<p>Government ownership is strong in supporting the rapid assessment and policy dialogue,</p>

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Project Framework (cont'd.)

Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
Pilot test Policy and strategic implications	<ul style="list-style-type: none"> • Detailed proposal for the pilot program • Policy dialogue • Final report with lessons learned and policy and strategic implications, drawing from the pilot test and rapid assessment 		and in identifying and supporting a carefully designed pilot Project has access to Government officials and good data, and is able to influence policy and strategy
Activities and Inputs Advisory services for assessment Support for program	<ul style="list-style-type: none"> • International (4.5 person-months) of consultant services for rapid assessment, drafting pilot proposal, and evaluation • Studies and surveys • Seminars and workshops • Equipment • In-country training • Training materials, software, and publication • Logistics support 	<ul style="list-style-type: none"> • TA reports • Consultants' reports • Feedback from participants 	Adequate collaboration between consultants and government counterparts Objective selection and participation of government officials and trainees

ICT = information and communications technology, TA = technical assistance.

Establishing an E-Center in the Informal Sector for E-Learning in Information Technology and Related Areas in India

P.N. Gupta

Introduction

The objective is to set up a center for e-learning in information technology (IT) and related areas in the informal sector by the DOEACC Society, an autonomous body of the Department of Information Technology, Ministry of Communications and Information Technology. The Center would provide web-based quality IT education and training to persons of all ages from all walks of life from lay persons to working professionals at the certificate to postgraduate level.

The course content will be developed by subject matter specialists and international/national experts. The DOEACC Society will deliver the course material and its administration to students through its web site. Contact classes will be organized through its nodal center and accredited institutes. Cyber cafés will deliver materials through franchising. Efforts will also be made to develop the content in Indian languages.

It is estimated that 2.2 million IT professionals will be needed by the end of 2008, of which approximately 0.7 million will be produced in the formal sector, leaving a gap of 1.5 million to be filled by informal IT education. Considering that the DOEACC Society would take up 50% of the market share, it would be able to generate 0.75 million IT professionals by the end of 2008.

The DOEACC Society has an existing project on development and delivery of online courses for IT education and training in the informal sector in 4 levels of knowledge and skills development. The objective is to develop content of the courses shown on the next page.

Administration and delivery of the courses will all be online. Students will be able to submit their project reports and interact with experts online. The software is nearing completion and content development has been undertaken for about 56 modules involving an estimated 3,000 hours of content.

Course	Course Duration	Career Opportunities
O Level	One-year Diploma Course after 10+2 (12 years of schooling)	Assistant Programmer
A Level	One-year Advance Diploma Course after 'O' Level or Graduation in Arts/Science/Commerce, etc.	Programmer
B Level	3 Years after Graduation in Arts/Science/Commerce	System Analyst/ Software Engineer
C Level	Two-year Program after a Degree in Engineering/Masters in Science/Mathematics/Statistics or 'B' Level	Project Manager

Issues

The issues for e-learning implementation include: (i) bandwidth and connectivity, both of which are being expanded by the Government; (ii) low computer penetration (currently 11 per 1,000 persons), which is being addressed by making low-cost computers and software available; and (iii) developing quality content in English and Indian languages, for which efforts are being made to develop machine translation from English to Indian languages. A standard key is also being developed for Hindi and other Indian Languages.

Implementation Arrangements

The Government encourages integration of ICT, Internet, and intranet tools into the learning environment and establishing e-infrastructure and content development. It is investing in pilot projects for understanding contemporary technologies, instructional design, and pedagogical techniques as well as developing reliable e-infrastructure for delivery of e-learning content. Teacher training programs are being organized to train teachers from schools to university level to use IT as a tool in their classrooms. The private sector is also being encouraged to participate actively in such areas as content creation, courseware development, and delivery systems.

Benefits of the Project

The output of the project would be persons in all walks of life trained in the use of IT as a tool in their respective areas of work. The main beneficiaries include students in schools, colleges, and universities,

Project Framework

	Design Summary	Monitoring Mechanisms	Assumptions (A) and Risks (R)
Goal	Setting up a facility to provide web-based quality IT education and training in the informal sector	<ul style="list-style-type: none"> • Response of Industry • Feedback from students and public 	<ul style="list-style-type: none"> • IT continues to play a major role in the Indian economy (A) • PC penetration increases • Connectivity increases
Purpose	Development of a large number of knowledgeable workers from both urban and rural areas	<ul style="list-style-type: none"> • Number of candidates taking the course • Increase in number of candidates opting for a certification • Number of placements made in enterprises • Percentage of rural candidates taking the course 	<ul style="list-style-type: none"> • IT and ITES industry maintain the current growth trends (A) • Some of the candidates using these courses opt for formal certificate courses for professional growth (R)
Outputs	Human resources at various skill levels (O,A,B, and C levels in the course descriptions above)	Surveys and collecting data from franchising institutions	<ul style="list-style-type: none"> • Good publicity (A) • Adequate infrastructure support (A) • High-quality attractive courses (A) • IT will also be used for development in rural areas (A) • Financial sustainability is attained (R)

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both in the classroom and under a distance/open education mode; the large number of school dropouts and adults in hitherto inaccessible areas; and working professionals in government, industry, and services. The e-learning facility would be provided almost free, with a nominal

Project Framework (cont'd.)

	Design Summary	Monitoring Mechanisms	Assumptions (A) and Risks (R)
Activities	<ul style="list-style-type: none"> • Content Development • Development of self-evaluation submodules • Certification process • Infrastructure, planning and development, delivery mechanisms, • Franchising schemes at delivery • Working out sustainable mechanisms (institutes, cyber cafés, etc.) 	Development of a project planning matrix having objectively verifiable indicators	<p>Adequate high-quality human resources are available across the country for the project (A)</p> <p>Either government provides the financial support or the end user is able to pay (A)</p> <p>Infrastructure with adequate connectivity and bandwidth is available (R)</p>
Inputs	<ul style="list-style-type: none"> • Course content developers • Practical assignment (virtual lab) developers • Technology providers • Delivery mechanisms • Teachers • Infrastructure designers • Franchisees and appropriate funding for them 		<p>Government provides financial support (A)</p> <p>Quality subject matter experts coordinate with content developers and animators (A)</p>

cost of about US\$2 for a specific skill development level. This nominal cost may be increased in phases, with a view to achieving self-sustainability over a period of about 5 years.

Cost Estimates (US\$ million)

Item	Total Cost	2005–06 1st Year	2006–07 2nd Year	2007–08 3rd Year	2008–09 4th Year	2009–10 5th Year
1. Consultants for Setting Up Virtual Laboratories	4.77	0.52	1.30	1.30	1.30	0.35
2. Equipment	8.74	3.95	0.44	1.30	1.30	1.75
3. Software	10.22	4.60	0.52	1.53	1.53	2.04
4. Training						
a. Domestic Experts	0.82	0.08	0.25	0.25	0.16	0.08
b. International Experts	0.30	0.06	0.06	0.06	0.06	0.06
5. Seminars and Conferences						
a. National Experts	0.82	0.08	0.25	0.25	0.16	0.08
b. International Experts	0.30	0.06	0.06	0.06	0.06	0.06
6. Research and Surveys	0.87	0.22	0.44	0.11	0.10	0.00
7. Administrative Costs and Contingencies	4.38	1.43	0.50	0.80	0.84	0.81
Total	31.22	11.00	3.82	5.66	5.51	5.23

Source: Participant's estimates.

Computer Literacy Program, West Bengal, India

Ravi Kant

Introduction

Since 2001, the government of West Bengal has covered 3,000 schools in its computer literacy program in partnership with established IT companies (public-private partnership). About 400 students per school (Classes VI–XII) receive formal computer literacy education. The state government's partner delivers the education in the schools. So far, the government has spent US\$6.8 million for this program. The total number of target schools (junior high, high, and high secondary) is 11,964. Thus there is current shortfall of nearly 9,000 schools.

The present proposal is to cover another 5,000 schools in rural areas; some schools are in extremely remote locations with minimal infrastructure.

Issues

Today India is well placed in development of the IT industry and IT resources. IT contributes 3% of the national GDP and this is expected to reach 7% by 2008. More than 813,000 people are employed in the Industry in India, making it the second largest IT workforce in the world after the US. It is estimated that India needs at least 2.2 million IT workers by 2008. On present projections, India could face a shortage of 0.5 million skilled IT personnel by that time.

However, 70% of the country's population live in rural areas and have almost negligible access to IT and the Internet. This hampers their access to information and deprives them of the opportunities opening up in society. This is creating a huge digital divide that affects the quality of life of the majority of the population.

India needs a huge IT workforce to meet its vision of being an IT superpower. In support of this vision, there is a need to expose all children to computers as an enabler to learn and to become integrated into the networked world. The majority of the nation's children live in rural areas. The government is making an effort to extend ICT infrastructure (telephone lines, etc.) to the rural areas.

Project Purpose and Output

The purpose of the present project is to take computer literacy to 5,000 schools covering 2 million students in the classes VI –XII in the rural areas of West Bengal over a 6-year period. The state government is providing strong support for this project—the political will in this endeavor is very strong.

Methodology and Key Activities

This project requires setting up IT infrastructure in the schools and providing trained faculty with a proper management and monitoring mechanism. The literacy program is delivered through formal lectures and laboratory sessions in the schools (both in school hours and after school hours, including holidays, to take full advantage of the infrastructure). Each school will have 10 PCs with peripherals and Internet connection (dial-up). The private partner will be responsible for procurement and installation, software deployment, and preparation of course material. The private partner will recruit (preferably locally) and train teachers. There would be periodic evaluation to ensure quality of teaching and student involvement.

This program is completely voluntary in nature. Therefore, students will enroll only if the delivery system is sound and effective. Each student will pay the equivalent of US\$0.75 per month for this program. Poor students, those living below the poverty line, will be exempted from the fee. Because the program has already been piloted, the strategy and methodologies for effective delivery are in place. The Department of School Education is responsible for selection of the schools and site preparation. A state-level advisory committee steers the program.

Project Framework

	Design Summary	Monitoring Mechanisms	Assumptions (A) and Risks (R)
Goal	To bridge the digital divide in the state	Advisory committee at the state level	Political stability in the state. The same party has been in government since 1977 (A)
Purpose	To take computer literacy to the rural areas of West Bengal	Periodic meetings of all stakeholders	Strong will and drive at the local level (A)
Outputs	Extending computer literacy to 5,000 schools covering 2 million students in classes VI–XII	School-level project management team	400 students are enrolled per school (A) Timely payment of the fees by the students (A)
Activities	Formal computer literacy lessons to be delivered by competent IT trainers (by the private partner)	Project management group	Indifferent attitude of some school authorities (R)
Inputs	Site preparation in the schools IT infrastructure in the schools Provision of trained faculty Public-private partnership	All stakeholders	Inadequate infrastructure –cost overruns (R) Provision of electricity (R) Availability of web access (R)

Cost Estimates and Financing Plan

The total cost of the project is US\$105.96 million. The donor contribution (36%) is US\$38.13 million. The state government share is 3% and that of the private partner 61%. The student fee payments are to be apportioned between the private partner and the government to pay for teachers' salaries, loan payments, and management activities.

Implementation Arrangements

The roles of the major stakeholders are as follows.

State-level advisory committee:

- Overall direction and guidance for the project.
- Ensure conflict management.
- Design of course material.

Department of School Education, Government of West Bengal:

- Selection of the schools.
- Site preparation.
- Ensuring an adequate environment in the schools for the project.

Department of Information Technology, Government of West Bengal:

- Selection of the private partner.
- Specification of the IT infrastructure.
- Preparation of project documents.

Private partner:

- Hardware and software deployment in the schools.
- Deliver the computer education in the schools.
- Recruit and train faculty for the program.
- Ensure quality of teaching.

Benefits of the Project

This project will add significantly to the IT-literate workforce in the state. The public would be enabled to use and appreciate IT in day-to-day life. The endeavor would go a long way to bridge the rural-urban digital divide. The peak of the IT pyramid in the country can only be raised if it has a large base; hence, the focus on school youth.

E-Learning Development Project in Indonesia

Hendi Mufti Setiawan

Introduction

In order to address the demand for higher education and limited availability of seats in public and private universities, the Government of Indonesia proposes to improve access to and quality of higher education through ICT. The Government has prioritized three strategies for e-learning in higher education: (i) improving knowledge habits of society, (ii) developing ICT skills/competency, and (iii) improving the effectiveness and efficiency of education. It has defined objectives, key programs, and a long-term plan of activities.

The Government's efforts to increase national competitiveness in this global era are reflected in Presidential Decree No. 50 of 2000 on the establishment of an Indonesian Coordination Team on ICT. The Government has issued a policy on the use of ICT for education, which is stated specifically in Presidential Instruction No. 6 of 2001. Furthermore, the Minister of National Education announced Decree No. 107 of 2001 regarding a distance-learning program for higher education and then formed a working team on ICT for education. This team is coordinated by the Director of Educational Research and Development, with the Director of the Center for Communication and Information Technology for Education as vice-coordinator. All units in the Ministry of National Education are members.

Issues

Indonesia is the 4th most populous country in the world, with more than 200 million people. Among them are 6 million new senior secondary education graduates. However, only just under 2 million students can enroll in higher education facilities, which consist of 77 public universities spread across the country that provide seats for 476,000 students and 1,293 private institutions that provide seats for about 1,450,000 students. As a result of competitiveness in the work place, some workers also intend to increase their knowledge and skills by choosing universities that offer distance learning or night classes.

The infrastructure to support e-learning is very limited. There are only 40 Internet service providers, mostly with slow connections. Their clients number about 0.5 million, with around 2 million users, or 1% of the Indonesian population. The present uses of Internet are commerce, 42%; higher education, 30%; government, 21%; research, 6%; and nongovernment offices, 1%. Internet is still expensive for the majority of the population.

The literacy level in IT is very low. The users of Internet based on their profession are students 39 %, workers 22%, managers 17%, assistant managers 5%, professionals 5%, directors 4%, entrepreneurs 3%, and others 5%. Users according to educational background are elementary schools/junior high schools 2%, high schools 41%, college graduates 9%, undergraduates 43%, and graduates 5%.

Initially, only one institution had the right to carry out distance education, Universitas Terbuka (Open University). After the Minister of National Education announced a new policy on distance education in 2001, eligible educational institutions were allowed to implement distance learning programs. So far, only a few of institutions provide distance learning using ICT. As a result, some overseas institutions have used the opportunity. For example the Education Advising Service of the American-Indonesian Exchange Foundation has encouraged people to joint the US distance learning program.

It is obvious that the current number of universities is inadequate to meet the need for higher education. Also, the economic situation precludes building new infrastructure, such as classrooms, laboratories, and libraries.

Proposed Project Purpose and Output

The proposed project comprises a detailed package of policy and investments for the development of e-learning in higher education in Indonesia. The overall goal is to increase the standard of human resources and raise the educational level by increasing enrollment in higher education and providing better qualified graduates.

The output of the project will include (i) improvement in knowledge-seeking behavior, (ii) enhancement of ICT infrastructure and access, (iii) enhancement of ICT-based learning materials, (iv) increased higher education enrollment, (v) design of a monitoring and evaluation system, and (vi) specific implementation arrangements that strengthen good governance and increase accountability.

Methodology and Key Activities

The Ministry of National Education (MONE) will use its own resources for initial project preparation, selecting participating universities favored by ADB's geographic focus and based on criteria agreed on with ADB, considering (i) enrollment rates, (ii) educational capacity, (iii) availability of related infrastructure, (iv) budgetary commitments to sustain the project, (v) commitment to zero tolerance for fraud and corruption, and (vi) implementation capacity. MONE will coordinate with ICT providers, such as PT. TELKOM and PT. INDOSAT, on the provision of infrastructure related to ICT. It will coordinate with the National Development Planning Agency (BAPPENAS) on national development plans for human development and regional autonomy, and with the Indonesian Coordination Team on ICT.

Consulting services will be used to prepare the initial assessment of the higher education subsector and a project proposal. Developing multiyear plans with higher education providers will require close consultation and participatory planning with the preselected universities, while assisting them to elaborate technically and financially viable proposals that can be submitted for government approval.

Implementation Arrangements

The executing agency will be the Directorate General of Higher Education of MONE. A technical team, comprising senior staff in the Directorate General and the Center for Communication and Information Technology for Education (PUSTEKKOM) set up prior to the project appraisal mission, will work closely with selected universities on their e-learning development needs, provide guidance to the project consultant team, and constitute the direct counterpart of ADB throughout project preparation.

The project will be implemented in three parts over 5 years in 5 selected universities as the pilot project for the e-learning program in higher education. The first part will be introducing new learning strategies that allow student to engage in learning activity, improving teachers' capability in facilitating and delivering courses, and disseminating the new learning strategies to the secondary school students. The second part will be setting up the ICT hardware and software, and building up the online libraries with subscriptions to e-books and e-journals. The third part will focus on designing and training in the ICT-based learning material.

Project Framework

Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms
<p>Goal Increase the human resources standard and raise the educational level.</p>	Increase in proportion of students completing higher education in total labor force	National statistics
<p>Purpose Increase enrollment in higher education and provide better qualified graduates</p>	Participation rate Achievement of minimum service standards	MONE statistics
<p>Outputs</p> <ul style="list-style-type: none"> • Improved knowledge seeking behavior • Enhanced ICT infrastructure and access • Enhanced ICT-based learning materials • Increased higher education enrollment 	<p>Changed learning strategies</p> <p>Improved Internet access Number of ICT centers in campus Increased ratio of computers per student</p> <p>Number of teachers qualified through an upgrading program Increased ICT-based materials Increased number of libraries that subscribe to e-books and e-journals Increased enrollment in e-learning programs, Accreditation system approved by MONE</p>	<p>Increased Internet access</p> <p>Courses</p> <p>MONE statistics</p>

ICT = information and communications technology, MONE = Ministry of National Education.

The Government may request ADB to finance US\$27.45 million equivalent of the project budget on a loan basis from ADB's ordinary capital resources and the Asian Development Fund. The Government will finance the remaining US\$11.78 million as counterpart funding.

Benefits of the Project

Indonesia's important role in an expanded Association of Southeast Asian Nations (ASEAN) economic zone and in the Asia-Pacific Economic Cooperation (APEC) area will demand increased

Cost Estimates and Financing Plan (US\$ million)

Item	Government Share	Donor Share	Total Cost
1. Consultants			
a. International Consultants		10.00	10.00
b. Domestic Consultants	1.02	1.02	2.25
2. Equipment and Software			
a. Equipment	2.50	2.50	5.00
b. Software		2.00	2.00
3. Buildings and Furniture			
a. Buildings	2.50	2.50	5.00
b. Furniture	0.50	0	0.50
4. Training, Seminars, and Conferences	1.25	1.25	2.50
5. Research, Development, and Surveys	1.00	2.00	3.00
6. Miscellaneous Administration and Support Costs	2.40	3.60	6.00
7. Contingencies	0.60	2.40	3.00
Total	11.77	27.27	39.25

Source: Participant's estimates.

competitiveness in terms of skilled workers and professionals at postsecondary education levels. In this setting, the project will increase access of students to higher education, improve the quantity and quality of higher education, and expand the capacities of graduates.

Integrating ICT into the Classroom in Indonesia

Uwes Anis Chaeruman

Introduction

As noted in the previous action plan, the Government of Indonesia has realized the importance of ICT to improve the national competitiveness. An important aspect is integrating ICT into the classroom (teaching-learning process), especially for the kindergarten to grade 12 (K-12) group, to expand the knowledge base of future generations. This requires systematic application of ICT simultaneously across all components of the school system, such as teacher capacity, school facilities, curriculum, and learning materials. This proposal is a systematic effort to build the knowledge base of students.

Issues

At present, there are limited ICT facilities in educational institutions, there is a low level of teachers' literacy and competency in ICT, and there are few ICT-based learning materials.

Proposed Project Purpose

The objectives of the project are

- to develop knowledge-based social and cognitive skills in students (such as high-order thinking skills, problem-solving skills, and knowledge-management skills);
- to develop students' competencies/skills in ICT; and
- to improve the effectiveness and efficiency of the learning process.

Project Outputs

The outcomes of the project are expected to be

- enhanced ICT facilities (hardware and software) in schools,
- improved teacher's ICT literacy and competency to integrate ICT into the teaching-learning process, and
- enhanced number of ICT-based learning materials.

Project Framework

Design Summary	Performance Indicators/ Targets	Assumptions and Risks
<p>Goal Integrating ICT into classrooms</p>	<ul style="list-style-type: none"> • 5% (approximately 1 million) K-12 teachers are ICT literate and are competent to integrate ICT into the teaching-learning process • 5% (approximately 1,000) K-12 schools are equipped with adequate ICT facilities (hardware and software) • 5% of K-12 schools are supported with adequate ICT-based learning materials. 	
<p>Purpose</p> <ul style="list-style-type: none"> • Develop knowledge-based social and cognitive skills in students • Develop students' competencies/skills in ICT 	<ul style="list-style-type: none"> • Improve the effectiveness and efficiency of learning process in schools. • Developed knowledge-based society habits of students (such as high-order thinking skills, problem solving skills, etc.) • Increased students' skills in using ICT • Increased effectiveness and efficiency of the learning process 	
<p>Outputs</p> <ul style="list-style-type: none"> • Enhanced ICT facilities (hardware and software) in schools • Improved teachers' ICT literacy and competency in integrating ICT into the teaching-learning process. • Increase in ICT-based learning materials. 	<ul style="list-style-type: none"> • 5% of K-12 schools of Indonesia are equipped with adequate ICT facilities (hardware and software) for learning • 5% of K-12 teachers are ICT literate and competent to integrate ICT into the learning process • The number of offline ICT-based learning materials for K-12 is increased by 10% per year • The number of online web-based learning materials for primary and secondary education is increased by 10% per year 	

continued next page

Project Framework (cont'd.)

Design Summary	Performance Indicators/ Targets	Assumptions and Risks
<p>Activities</p> <ul style="list-style-type: none"> • Design, develop, and implement ICT literacy training for K-12 teachers • Design, develop, and implement training of integrating ICT into the teaching-learning process for K-12 teachers • Procurement, distribution, and installation of standard ICT facilities for primary and secondary schools • Development, production, and dissemination of offline ICT-based learning materials • Development, production, and application of web-based learning materials for primary and secondary education • Conducting research and development on ICT integrated teaching-learning strategies/models for K-12 schools 	<ul style="list-style-type: none"> • 5% of K-12 teachers are well trained in ICT • Increased number of training programs and teachers trained • 100% of ICT facilities procured, distributed, and installed in 5% of K-12 schools • All online and offline ICT-based learning materials developed and produced evaluated before dissemination • Evaluated offline ICT-based learning materials disseminated free to 5% of K-12 schools • Evaluated online web-based learning materials uploaded (on http://www.e-dukasi.net) are accessed and utilized well by 5% of K-12 schools • 5–10 models of ICT integrated teaching-learning strategies for K-12 schools are developed, field-tested, and ready to be applied. 	<ul style="list-style-type: none"> • Teachers have time to follow the training • Well-planned training system design and well-trained trainers available • Availability of experts to develop ICT-based learning materials • No delays in design and development phase
<p>Inputs:</p> <ul style="list-style-type: none"> • K-12 teachers • International training and instructional system design experts • International and local professional trainers • Local subject matter experts • International and local instructional media experts • Skilled/professional researchers • Professional instructional program evaluators • ICT vendors 		

ICT = information and communications technology, K-12 = kindergarten to grade 12.

Methodology

The main tools to achieve the project's objectives are teacher capacity building (training), and research and development programs.

Key Activities

- Training in ICT literacy for primary and secondary school teachers.
- Training on integrating ICT into the teaching-learning process for primary and secondary school teachers.
- Procurement, distribution, and installation of ICT facilities (hardware and software) in primary and secondary schools.
- Development, production, and dissemination of offline ICT-based learning materials for primary and secondary education.
- Development, production, and application of online web-based learning materials for primary and secondary education.
- Conducting research and development on ICT-integrated teaching-learning strategies and models for K-12 pupils.

Of the total cost, US\$20.25 million could be funded by ADB. The rest, US\$2.60 million, will be financed by the Government of Indonesia.

Cost Estimates and Financing Plan (US\$ million)

Item	Government Share	Donor Share	Total Cost
1. Consultants			
a. International Consultants		0.50	0.50
b. Domestic Consultants		0.25	0.25
2. Equipment and Software Procurement			
a. Equipment		5.00	5.00
b. Software		1.00	1.00
3. Training, Seminars, Workshops, and Conferences	1.00	5.00	6.00
4. Research, Development, and Surveys	1.00	7.50	8.50
5. Miscellaneous Administration and Support Costs	0.50	0.50	1.00
6. Contingencies	0.10	0.50	0.60
Total	2.60	20.25	22.85

Source: Participant's estimates.

Implementation Arrangements

The executing agency of this project, the Center for Information and Communication Technology for Education (PUSTEKKOM), will work cooperatively with the Directorate General of K-12 Education, the Center for Curriculum Development, Educational Research and Development, and any other related parties.

This project will be implemented over 5 years. International and domestic experts, especially in instructional system design, instructional media, and subject matter, will be required.

Benefits of the Project

This project will result in 1) about 1 million highly qualified K-12 teachers; 2) about 1,000 K-12 schools well equipped with standard ICT facilities; 3) thousands of ICT-based learning modules; and 4) 5–10 ICT integrated teaching-learning strategies/models. These four outputs will lead to a highly effective, efficient, attractive, and joyful teaching-learning process; and a human resource of thousands of highly qualified (knowledge-based and ICT-literate) graduated K-12 students.

Analysis of Higher Education in the Kyrgyz Republic

Aleksandr Yurevich Alekseyev

Introduction

The speech of the President of the Kyrgyz Republic at the Republic Conference on the issues of higher education (26 April 2003) paid much attention to information technology development in the country. The President noted that one of the important tasks facing higher education is to form a mass information culture for the purpose of creating an information society. For this purpose, it is necessary

- to provide adequate technological equipment for each student and graduate, regardless of course specialization;
- to implement compulsory certified minimum mastery by each specialist in IT—simply put, to disseminate European standards in awarding of “computer rights” in the country;
- to provide qualified specialists training in information technology;
- to create a national center of information technology to train highly qualified specialists;
- to create information technology centers in higher education institutions (HEIs) profiled in accordance with their mandate and areas of specialization; and
- to develop and widen academic utilization of the education computer network AKNET to serve as the basis of development of distant education in the country.

Current Situation

1. Access of Higher Education Institutions to ICT

HEIs are more advanced in ICT than are secondary educational institutions (schools, colleges, vocational schools). According to data provided by the Ministry of Education and Culture (June 2002) there were 48 HEIs in the country in 2002, which trained about 200,000 students (i.e., about 4% of the population). Of these, 52.0% studied full-time, 47.5% were part-time (distant) and the remainder studied through correspondence courses.

One indicator of access to ICT in HEIs is the ratio of a full-time students to computers. As shown in the table below, this ratio has been improving in recent years.

Number of Students and Computers in HEIs, 1996–2002

Year	Number of Students	Number of Computers	Ratio Student/Computer
1996	77,800	1,200	65
1997	97,800	1,850	54
2000	188,800	5,100	37
2002/03	199,100		

Almost all HEIs have access to the Internet now. An active Internet audit in May 2003 revealed that 27,400 students (14.5% of the total number of students), and 2,500 school children, (0.22%) spent more than 1 hour/week online.

2. Integration of IT in the Process of Training

Educational establishments make up 6.4% of the Internet sector in the Kyrgyz Republic. Content of the web sites includes information on education institutions and requirements for entrants. Very few allow filing an application through the Internet. Development of electronic courses and study of ICT disciplines using IT are at an initial stage.

According to official data, there were 25,000 computers in personal use at the end of 2002. Most of them were used for educational purposes. Computer testing of knowledge in HEIs is used widely, especially in junior courses. The education computer network (AKNET) is built on high-speed channels of information transfer among scientific and educational institutes to integrate science and education and expand distance learning. Distance learning centers have been established in some HEIs with electronic study materials, allowing students to establish dialogue with teachers through television, e-mail, and the Internet.

3. Training of Specialists in ICT

Over the past decade, there has been increasing specialization at the Bachelor, specialist (engineers), and Master level in various disciplines connected with ICT. However, because most HEIs have started only recently, they do not have the necessary materials,

especially computer parts, development of electronic hubs and structures, and teaching personnel.

Issues

The following needs must be addressed in order to improve ICT literacy in HEIs.

- Improve the quality of and appoint ICT specialists to state institutions, state enterprises, and education institutions (school, vocational schools, HEIs) to decrease the number of departures after graduation.
- Reduce the ratio of students to computers to no more than 10.
- Connect all HEIs to the Internet using up-to-date technology.
- Integrate ICT into the process of study
- Revise fundamentally the curriculum of all HEIs and all specializations.
- Revise the specialization of training for ICT specialists.
- Develop distance learning centers in order to decrease correspondence course usage.
- Develop electronic learning materials and create electronic libraries, combining the electronic information resources of all educational institutions in the country.

Establishment of ICT Facilities for E-Learning in the LAO PDR

Inpeng Souvannasane

Introduction

ICT/IT is a recent phenomenon in the Lao People's Democratic Republic (PDR), especially in the education field. Few ministries have a computer network. Those without include the National University of Laos (NUOL)—the only university in the country—and the Ministry of Education, which has only about 36 PCs and they are not connected with others.

NUOL has two IT rooms: an information technology center at Dong Dok campus, and one at the faculty of Engineering, Sokpalouang campus, with a total of about 80 computers. There is no distance learning or e-learning.

Issues

Almost all education in the Lao PDR is provided on the blackboard using chalk. Some institutes in capital cities, such as Vientiane, have whiteboards and markers but no transparencies, no overhead projectors.

Problems to overcome in order to establish e-learning include lack of financial resources and basic education infrastructure, weak telecommunication and transportation infrastructure, and, most importantly, lack of human resources.

At present, the Government focuses only on primary and secondary schools, with the aspiration that all children will have the opportunity to learn and complete secondary school.

In 2003, the NUOL faculty of Engineering received an IT room for distance learning, donated by the Japan International Cooperation Agency. It is used twice a week for teachers only.

Proposed Project Purpose and Output

A two-phase project is proposed that will establish a path for the future development of e-learning in the country. The first phase is to bring together relevant stakeholders—such as various ministries, NUOL, private institutes, and IT teachers—in workshops to discuss ways to introduce e-learning and to appoint experts to lead the process. The outcomes will include policies, curriculum, and establishment of an e-learning center.

Benefits of the Project

The project will enable the Lao PDR to develop policies, regulations, and curriculum for e-learning; ICT rooms for general use; human resources in ICT; and an ICT center. These will go far toward raising Lao PDR education to international standards.

Project Framework

	Targets	Assumptions and Risks
Goal	<ul style="list-style-type: none"> • Training of trainers • Regulation and policy • Development of ICT human resources 	
Purpose	<ul style="list-style-type: none"> • To determine the potential of ICT and e-learning among the general community 	
Outputs	<ul style="list-style-type: none"> • ICT center • Policy • Curriculum 	Financial resources No audio/video No practical application
Activities	<ul style="list-style-type: none"> • Workshop on ICT and e-learning 	
Inputs	<ul style="list-style-type: none"> • All ministries • Private organizations 	

Cost Estimates and Financing Plan (US\$ million)

Item	Government Share	Donor Share	Total Cost
PHASE I			
1. Workshops			
2. Materials and Equipment	0.05	0.15	0.20
	0.05	0.08	0.13
PHASE II			
1. External Consultants	0.40	1.00	1.00
2. Equipment and Software	0.05	0.80	1.20
3. Training, Seminars, and Conferences	0.03	0.12	0.17
4. Research, Development, and Surveys	0.03	0.30	0.33
5. Miscellaneous Administration and Support Costs	0.20	0.60	0.63
6. Contingencies.		0.30	0.50
Total	0.81	3.35	4.16

Source: Participant's estimates.

Teacher Training through Online Learning in the Maldives

Fathimath Thoufeega

Introduction

The Maldives, an archipelagic nation consisting of more than 1,000 islands, of which 199 are inhabited, provides an ideal setting for e-learning. The small land mass of about 290 square kilometers is dispersed in small islets in a stretch of deep ocean that is more than 900 kilometers long and 200 kilometers wide.

The inhabited islands of the Maldives are far apart. There are four regional airports and an international airport but only a small number of islands are effectively serviced by internal air transport. The high cost of transport in all its forms remains a constraint for socioeconomic development.

In these circumstances, development of postal and telecommunication infrastructure has been challenging in terms of cost and technical considerations. Telephone services are available, although some islands have up to two connections only, and service charges are high. Mobile telephone use is on the increase because it is the easiest form of communication.

Educationally, the Maldives has achieved 98% literacy. Every island community has a government-run school, providing primary education up to Grade 7. More than half the communities are providing secondary education. Postsecondary education is offered by a college that has many academic and vocational training programs. Of the population of 270,000, some 100,000 or 40% are students, enrolled in schools, college, and private learning centers.

Current Status

E-learning is expected to play a central role in the provision of education in the Maldives, both at the secondary and tertiary level. According to the Ministry of Education, e-learning is to become an integral part of education delivery. The areas of application are provision of secondary subjects, in-service and pre-service training of teachers, and providing professional development opportunities for

people in all sectors. According to the strategic plan for the education sector (2003–2005), e-learning is expected to become an integral delivery mode for higher education courses offered by the Maldives College of Higher Education.

The e-learning policy is geared toward provision of quality education for all students. At the primary level, a policy was put in place to provide computer education to primary students through a government-private sector partnership. Under this policy, computer laboratories were set up in all primary schools in the capital island. Also, computer laboratories are being developed in other islands under a program whereby the Government provides matching grants for establishing and operating such laboratories. The policy and program have allowed several schools to offer computer-literacy courses at the primary grades. The Educational Development Centre, the body of the Ministry of Education that develops school curriculum, is preparing a "technology" course to be offered to primary schools, beginning in 2005.

An information technology unit (ITU) has been established under the Ministry of Education to spearhead the spread of information technology in educational practice. The ITUs' efforts are directed at two fronts: development of educational media for schools and supporting teachers to incorporate information technology in teaching. This unit also supports the development of in-school technology infrastructure. ITU, in conjunction with the Educational Development Centre, is also working on a project to place curriculum resources on its web site. The objective is to use portals to support teachers with educational resources.

While achievements have been made in incorporating digital technology in traditional classroom settings, the Maldives has yet to establish an e-learning platform to deliver open and distance education courses. At present, distance education courses are offered, but there is insufficient Internet access other than in the main island.

One positive direction, related to e-learning, is the proposed launching of atoll-based teacher development centers in some of the larger schools under a grant from the United Kingdom. These centers would receive international technical help to develop IT-based teacher training facilities. The project also intends to provide e-based learning to teachers in nearby schools where Internet access is available.

Issues

The implementation of e-learning depends on the development of a clear direction for e-learning in the Maldives. No particular organization has taken the lead to develop e-learning. The ITU could play such a role; however, it is involved in curriculum development in the education ministry. Therefore, while it can play the role of a facilitator, it is unable to lead the development of e-learning.

Second, the Maldives lacks people who are well versed in course design for e-learning. It also lacks teachers and faculty members with technical knowledge to design and deliver e-learning programs.

The other key issue regarding e-learning is lack of IT infrastructure to support e-based learning. Delivery of e-learning to homes via Internet is not a feasible option for most students. Unless e-learning is accessible to a large audience, the cost of production and delivery of e-learning courses may not justify the benefits. This is an issue that needs to be studied closely.

Through the assistance of ADB, the Government has planned the development of a computer network for the capital region of the country. It is expected that this network will soon extend to the rest of the country. When the network is in place, the cost of using an intranet is likely to decrease, allowing for expansion of e-learning in the Maldives.

Proposed Project Purpose

The aim of the project is to train as many local teachers as possible by the year 2007. At present, the Centre for Open Learning is training about 450 primary teachers through open learning, mainly as correspondence education with print-based materials. The students are distributed across 104 islands and they meet in learning centers (of which there are 18 across the archipelago) in their region once every 4 weeks for tutorials.

Proposed Project Outputs

At least 50% of the local teachers will be trained in e-learning and e-learning infrastructure will be set up in the learning centers.

Methodology and Activities

The 18 centers will build their own e-learning infrastructure, consisting of a computer laboratory containing 20–25 PCs. The funding agency is to provide the hardware; the building will be made by the community with materials provided by the Government.

For the first phase of the project, four (in Seenu Atoll, H.Dh Atoll, Gaafu Dhaalu Atoll, and Raa Atoll, respectively) centers will be selected as training centers. They have been chosen because they already have established college campuses and it will be easier to get tutorial (other than online) help if needed. These training centers will cater for teachers in their regions.

The course content is already available from the faculty of education, and needs to be changed to online learning format with instructions on use with the help of consultants.

The Centre for Open Learning will provide all the administrative support that all the centers need and the centers would provide the students with the academic and administrative support they require.

Cost Estimates and Financing Plan

Item	Government Share (%)	Donor Share (%)
1. Consultants		
a. International Consultants	20	80
b. Domestic Consultants	20	80
2. Equipment and Software		
a. Equipment (25 x 4 computers)	100	
b. Software		100
3. Buildings and Furniture		
a. Buildings (4 rooms)	50	50
b. Furniture (100 chairs and 100 tables)	50	50
4. Training, Seminars, and Conferences	10	90
5. Research, Development, and Surveys	0	100
6. Miscellaneous Administration and Support Costs	10	90
7. Contingencies	10	90

Source: Participant's estimates.

Implementation Arrangements

The Ministry of Education and Maldives College of Higher Education will be involved at the policymaking level. The Centre for Open Learning and local centers will work together with the funding agency, international consultants, and the communities in implementing the project.

International consultants will provide a framework and instructional design of the program and train local persons to continue this function. The private sector will set up the infrastructure (hardware) and equipment for online learning.

The completion of the online program and the teacher training would be the final outcomes of the project.

Upgrading the Existing Intranet in the Myanmar Education Sector

Daw Than Than Win

Introduction

The Ministry of Education of the Union of Myanmar has been promoting the education sector with the vision to create an education system that will generate a learning society capable of facing the challenges of the knowledge age. The ministry is implementing the Thirty-Year Long-Term Education Development Plan initiated in fiscal year 2001–2002. As part of the drive to enhance learning opportunities that transcend the limitations of place and time, e-learning was launched in Myanmar on 1 January 2001. Using ICT, learning opportunities have been opened for citizens regardless of location, age, experience, and educational qualifications. The aim of e-learning in Myanmar is to create an international academic environment that is endowed with dynamic knowledge, using up-to-date technology.

One of the thrusts of e-learning in the country is the development of a technologically literate population from a young age. In this connection, nearly 1,200 schools have been provided with computer-aided multimedia classrooms to date. Transformation of the learning environment in the higher education subsector began in fiscal year

2000–2001, with the initiation of the Special Four-Year Plan and provision of computer training centers, e-education resource centers, e-education learning centers, audio language laboratories, computer-aided language laboratories, multimedia lecture rooms, and conference rooms. There are 619 learning centers at higher educational institutions and high schools that are contributing to the development of e-learning.

In addition, e-learning programs have been introduced at both basic and higher education levels, and teachers and technicians have been trained to carry out e-instruction and the operation and maintenance of ICT appliances, and production of ICT-based learning materials. The Ministry of Education initiated the online training program on nonformal education in November 2003 and the online training program on education management for education officials and school principals in April 2004. This has enabled the reduction of training costs and at the same time has made it possible to increase the number of trainees.

At the tertiary level, Yangon University of Distance Education and the Mandalay University of Distance Education provide part of their instruction at the 619 learning centers that use e-learning. Yangon Institute of Economics offers the Diploma in Education Management, a one-year trimester program for senior faculty and administrators. Part of the program is spent at the respective home institutions and instruction is conducted through e-learning. The Diploma in Library and Information Management Programme, which aims to upgrade the quality of the staff of libraries of higher education institutions, includes a computer-aided web-based e-exam. Planned to be introduced in December 2004 is a Master's degree in computer science based on e-learning.

Issues

Key areas that need attention are as follows:

- **Hardware Maintenance.** With the huge increase in the number of computers and the use of ICT in schools and higher education institutions, considerations must be given to hardware maintenance.
- **Content Development.** Due to the expansion in the number of courses, designing, developing and delivering of web-based course and programs will need to be given careful attention. On-line learning for undergraduate and graduate level programs will need to be developed.

- Provision of Training for Trainers. To build the capacity of training programs, it will be necessary for more trainers to be nurtured.
- Introduction of E-management. E-management is essential for the development of the e-learning process. Hardware requirements for e-management will need to be dealt with.
- Upgrading the Existing Intranet Infrastructure in the Education Sector. Myanmar consists of 7 states and 7 divisions and to ensure equal opportunity, higher education institutions are spread all over the country. Although the higher education institutions are networked, it is necessary to expand the intranet to include the remote sites for the management and delivery of e-learning materials for the basic education sector. It will be necessary to set up the infrastructure to link the basic education state/division education offices and to promote broadband accessibility.

Proposed Project Purpose and Output

There is an existing network among the Ministry of Education and the universities, degree colleges, and departments under the ministry. The Myanmar Higher Education Network (MHE_Net) links all the higher education institutions with the intranet. Internet and e-mail services have also been made available to departments and higher education institutions under the Ministry of Education. The 20 education colleges have also been linked using the iPSTAR satellite communication system. Internet access has also been provided to 100 high schools as the first step. In order to improve efficiency, it is important that all the existing systems be brought under the same intranet system. The project will meet the software, hardware, and content requirements of the upgraded intranet system of the Myanmar education sector.

Methodology and Key Activities

The project, which is expected to be accomplished within 3 years, is to include expansion of the present intranet infrastructure to encompass schools and offices of education officers. The project will provide training programs in content development, system maintenance, and security.

Project Framework

	Design Summary	Monitoring Mechanisms
Goal	To upgrade the existing intranet in the Myanmar education sector	Departments of Higher Education, Ministry of Education
Purpose	To merge the various intranet systems currently in use to promote effectiveness in information sharing and dissemination	Departments of Higher Education, Ministry of Education
Outputs	A secure and effective single intranet system for the Ministry of Education	Departments of Higher Education, Ministry of Education
Activities	Training programs on content development, system maintenance, and security	Departments of Higher Education, Ministry of Education
Inputs	Training programs	Departments of Higher Education, Ministry of Education

Cost Estimates and Financing Plan (US\$ million)

Item	Government Share	Donor Share	Total
1. Consultants			
a. International Consultants		0.20	0.20
b. Domestic Consultants	0.01		0.01
2. Equipment and Software			
a. Equipment	0.46		0.46
b. Software	0.03	0.15	0.18
3. Buildings Furniture			
a. Building Maintenance	0.06		0.06
b. Furniture	0.01		0.01
4. Training, Seminars, and Conferences	0.01	0.03	0.04
5. Research, Development, and Surveys	0.02	0.10	0.12
6. Miscellaneous and Support Costs	0.01	0.05	0.06
7. Contingencies	0.02	0.10	0.12
Total	0.63	0.63	1.26

Source: Participant's estimates.

Implementing Arrangements

Senior level executives in departments, universities, education colleges, and schools need orientation in the intranet and need to set up the necessary teams. It is imperative that users at all levels are aware of and take full advantage of the ICT facilities provided.

Benefits of the Project

The main aim of the Ministry of Education is the development of a lifelong learning-based society that can face the challenges of the knowledge age. In support of this aim, the upgrading of the intranet system will enable the ministry to disseminate knowledge and information and upgrade human resources and skills throughout Myanmar.

Upgrading Myanmar's E-Learning Centers

U Khin Maung Ba

Introduction

The Ministry of Education in cooperation with the Ministry of Information broadcasts an interactive teaching and learning program using a data broadcasting system for distance education. There are 619 e-learning centers across the country in universities, degree colleges, high schools, and departments.

Present Situation

Internet use is part of the program for upgrading the education system under the Ministry of Education. The universities, degree colleges, and departments have their own intranets or local area networks. The previous action plan is a project that seeks to combine these into a single system to enable efficiency in use of teaching resources and communications.

The data broadcasting system uses IP and has been built as a wide area network. This system uses wireless and satellite communication links. The main server is located at the Myanmar Radio Television (MRTV) office and wireless communication is used between the UDE Resource Center, which is located at the Myanmar Education Research Bureau, and the MRTV office. The ThaiCom-3 satellite allows one-way communication between the UDE Resource Center and the learning centers.

Lectures, discussions, and regional development talks are transmitted to e-learning centers by the data broadcasting system in the form of text, graphic, audio, and video presentations.

Students from e-learning centers directly receive and can learn their lessons by computer monitor or television installed at the learning centers. If a person cannot come to a center at the direct transmission time, he or she can download or copy and study the lesson or topic of interest in his or her free time. Thus, the system serves all those who want to improve their knowledge anytime, anywhere.

Issues

Key areas that need attention are hardware maintenance, content development, training for trainers, and introduction of e-management.

Proposed Project Purpose

Myanmar consists of 7 states and 7 divisions and to ensure equal opportunity, higher education institutions are spread throughout the country. Although the higher education institutions are networked, it is necessary to upgrade some e-learning centers such that all students will have the same opportunity. This is in line with the focus of the Ministry of Education on the promotion of accessibility, quality, and diversity in the education sector in order to contribute to sustainable development in the country.

Methodology and Key Activities

The project, which is expected to be completed within 2 years, will provide training programs in content development, system maintenance, and security. Overall project management will be by the Department of Higher Education. The installation of the computing facilities will be at the department's headquarters. On-the-job training and online data services will also be carried out at the headquarters.

Benefits of the Project

The upgrading of the e-learning centers will lead to more widespread use of e-learning and the application of ICT in management. It will enable the Ministry of Education to disseminate knowledge and information to students more effectively.

Project Framework

	Design Summary	MonitoringMechanisms
Goal	To upgrade the existing e-learning center infrastructure in the Myanmar education sector	Departments of Higher Education, Ministry of Education
Purpose	To upgrade e-learning centers to promote effectiveness in information sharing and dissemination	Departments of Higher Education, Ministry of Education
Outputs	Effective e-learning system for the Ministry of Education	Departments of Higher Education, Ministry of Education
Activities	Training programs on content development, system maintenance, and security	Departments of Higher Education, Ministry of Education
Inputs	Training programs	Departments of Higher Education, Ministry of Education

Cost Estimates and Financing Plan (US\$ million)

Item	Government Share	Donor Share	Total
1. Consultants			
a. International Consultants		0.20	0.20
b. Domestic Consultants	0.01		0.01
2. Equipment and Software			
a. Equipment	0.53		0.53
b. Software	0.05	0.25	0.30
3. Buildings Furniture			
a. Building Maintenance	0.06		0.06
b. Furniture	0.01		0.01
4. Training, Seminars and Conferences	0.01	0.03	0.04
5. Research, Development and Surveys	0.02	0.10	0.12
6. Miscellaneous Administration and Support Costs	0.01	0.05	0.06
7. Contingencies	0.02	0.10	0.12
Total	0.72	0.73	1.45

Source: Participant's estimates.

E-Learning Support Project in Nepal

Ishwari Prasad Gnawali

Introduction

Presently, there are about 1,000 IT training institutes in Nepal, including 25 colleges that are offering Bachelor courses in ICT. Ten higher secondary schools and some 2,000 secondary schools have introduced computer education. The ongoing tenth national plan incorporates ICT in the school curriculum. About 1,000 students, almost all from private schools, have computer education as an optional subject in their school leaving year. Similarly, in private universities, students have good access to ICT but public universities have not yet introduced it in their education system.

The Distance Education Centre has been conducting a distance Primary Teacher Training Program for the last 25 years. Under the Secondary Education Support Programme (SESP), which is supported by ADB and Danish International Development Assistance, there are several ICT interventions. The National Centre for Educational Development is planning to integrate ICT in the secondary teacher training program in 2005, part of which will be distance learning. The Curriculum Development Centre will integrate ICT in the secondary curriculum. Campuses that provide academic teacher courses will be supported to revise their curricula to include ICT. Teacher educators will be supported to introduce ICT-based courses in these campuses. They will also be supported to establish well-equipped ICT centers. Many public secondary schools will be encouraged to introduce computer education and access to ICT will be improved.

To accomplish these activities, all the planning and preparation have to be done. However, there is a lot of confusion among the implementing agencies and a huge amount of national and international consultancy has been demanded. There is also a very strong need for an open university in the country to contribute to anytime-anywhere learning for people of all age groups. The proposed e-learning project seeks to provide support to expedite the ICT-related activities of the SESP and to materialize the dream of an open university.

Issues

Unlike the situation in the private education sector, public schools and public university campuses cannot afford ICT in their education system. This has created a visible gap in the quality in the education being offered by the two systems. Thus, one issue is to bring equitable access to ICT for all learners whether they are in the public or private education system.

Nepal would like to promote learning as a continuous process. Also, there are many learners who are not able to continue their formal education in colleges or universities for various reasons. They want to learn privately to achieve a higher degree of education. This is another issue facing Nepal.

The intervention of ICT education in the public education system of Nepal is a challenge. The communities are poor and cannot afford such technology. There is need for capacity building at every level. Training is needed for in-service teachers, in-service teacher educators, curriculum writers, and program developers. The campuses, the teacher training institutes, and the schools need ICT facilities. Addressing these issues demands a high level of commitment and a lot of resources.

There is a problem of unemployment in the country. Many youths emigrate looking for jobs but their prospects are poor because of their education level. The nation needs to become globally competitive in its education system.

His Majesty's Government of Nepal has expressed the following strategies and commitments in various policy documents:

- Computer education will be incorporated in the academic curriculum starting from the school level.
- IT will be used to improve the quality of education.
- Distance learning will be introduced through the Internet and intranet.
- A long-term program with a slogan "computer education to all by..." will be formulated.

Proposed Project Purpose

The project's overall purpose is to assist government organizations to effectively implement ICT-related activities of SESP and the Education For All program. The project also aims to support the Ministry of Education and Sports to formulate a policy on open learning

and provide financial and technical support to establish an open university. Following are the specific objectives of the project:

Component 1

- Coordinate ICT activities among various organizations under the Ministry of Education and Sports and support planning and implementation.
- Support the Curriculum Development Centre to integrate ICT in the school curriculum.
- Provide support to integrate ICT in academic courses.
- Support the National Centre for Educational Development to establish an ICT-integrated teacher training system.
- Support the Department of Education to incorporate computer education in public secondary schools.

Component 2

- Support the Government to formulate a policy on open learning.
- Provide technical and financial support to the Government to materialize the concept of an open university.

Project Outputs

Component 1

- ICT-integrated teacher training system in the 34 training centers under the National Centre for Educational Development.
- Computer education in public secondary schools.
- ICT-integrated teacher education courses.

Component 2

- National open learning and e-learning policies and legislation.
- An open learning university.

Methodology and Key Activities

The project station will be at the National Centre for Educational Development. An ICT and teacher education expert will be appointed as a project coordinator. The Centre will avail of other necessary officers and support staff. A project steering committee will be formed, with the secretary of the Ministry of Education and Sports as chair.

Project Framework

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal Improvement of overall quality and efficiency of school and college education</p>	<ul style="list-style-type: none"> • Learning achievement level of students • Pass rates in high school exams • Number of graduates through open learning 	<p>Project monitoring data</p>	<p>ICT continues to be a government priority in the education sector</p>
<p>Purpose</p> <ol style="list-style-type: none"> a. Assist government organizations to effectively implement ICT-related activities b. Build capacity for policy, planning, management, and delivery of ICT-based teacher training/education c. Promote a system of anytime-anywhere learning through the establishment of an open learning university 	<ul style="list-style-type: none"> • Effective implementation of ICT-integrated secondary curricula • ICT-integrated teacher training / education system • Enhanced ICT capacity of government personnel • Extension of computer education in public secondary schools • Formulation of open learning and e-learning policies and an open learning university established 	<p>Project monitoring data</p> <p>Progress reports of the SESP and EFA programs</p>	<p>Ministry commitment to implement ICT activities remains strong</p> <p>Educational personnel and teachers are released for training</p> <p>The budget allocation for ICT activities in EFA and SESP remain fixed</p> <p>Comprehensive open learning and e-learning legislation is formulated</p>
<p>Outputs</p> <ol style="list-style-type: none"> 1. An effective and sustainable ICT-based teacher training/ education system is established through the following: <ol style="list-style-type: none"> a. ICT-integrated teacher training/ education curriculum 	<ul style="list-style-type: none"> • Integration of ICT in the 10 month in-service certification teacher training courses • Revised teacher education curricula in line with the concept of ICT • 800 teacher trainers trained • Teacher training centers (34) are 	<p>Progress reports of EFA and SESP</p> <p>Project monitoring data</p>	<p>NCED as an umbrella organization coordinates and manages the training programs effectively</p> <p>Staff/teachers are released for training and they are enthusiastic to receive the training</p>

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Project Framework (cont'd.)

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>b. enhanced skills of the staff imparting teacher training</p> <p>c. improved and well-equipped IT facilities in teacher training/ education institutions</p> <p>2. Extension of computer education and IT-based teaching-learning in public secondary schools through the following:</p> <p>a. incorporation of ICT in the secondary school curriculum</p> <p>b. support for equipment in schools</p> <p>c. intensive computer training programs for teachers</p> <p>3. A system of open learning with emphasis on e-learning through the following:</p> <p>a. formulation of e-learning and open learning legislation</p> <p>b. establishment of an open learning university equipped with ICT facilities</p>	<ul style="list-style-type: none"> • Campuses (5) are equipped with ICT facilities • 200 teacher educators are provided with computers and ICT literacy training • Introducing computer education in 100 public secondary schools • Revised secondary school curriculum • 2,000 secondary schoolteachers receive intensive computer operation training • Legislation for open learning and e-learning • A national open learning university established 		<p>Schools and communities contribute to the introduction of computer education in the schools</p> <p>Government's commitments for open learning and e-learning strengthen</p>

EFA = Education For All, ICT = information and communications technology, NCED = National Centre for Educational Development, SESP = Secondary Education Support Programme.

Cost Estimates and Financing Plan (US\$ million)

Item	Government Share	Donor Share	Total
1 Consultants		0.10	0.10
2 Equipment and software			
a. Equipment			
b. Software	1.00	9.00	10.00
3 Building and Furniture			
a. Building			
b. Furniture	0.25	2.25	2.50
4 Training, Seminars, Workshops, Fellowships	2.50	7.50	10.00
5 Research, Development, and Studies	0.02	0.08	0.10
6 Miscellaneous, Contingencies	0.05	0.15	0.20
Total	3.82	19.08	22.90

Source: Participant's estimates.

Implementation Arrangements

The implementing agency will be the National Centre for Educational Development. The project will be implemented within its regular administrative framework. The open learning university will be an autonomous body. It will need support from the Government and donors to develop further and introduce new technologies and learning methods.

Benefits of the Project

The main project benefit will be improved quality of education through improved training/teaching/learning courses, upgraded teacher/trainer skills, and access to distance learning and life-long learning. The direct beneficiaries will be Ministry of Education and Sports staff, campus teachers, in-service teacher trainers, and schoolteachers who receive training. Ultimately, the beneficiaries will be school students, prospective teachers in the education campuses, and people of all ages wherever they work or live.

E-Learning Centers for the Workforce, Youth, and Disadvantaged Groups in Pakistan

Mr. Nazir Ahmed Sangi and Ms. Yasmin Masood

Introduction

The Government of Pakistan is assigning high priority to education. Its poverty reduction strategy paper also focuses on education for all in order to develop highly educated, skilled, and trained human resource that would contribute to the economic development of the country.

The Government aims to develop infrastructure and capacity in parallel. The country wishes to be a major player in the international forum. Support programs from the Government coupled with an established private sector are creating many opportunities for realizing this goal.

Education in IT includes degree programs. IT training comprises short courses focused on hands-on skills in specific IT areas where there is demand. Such training is provided to graduates as well as underemployed youth.

Issues

Most of the existing IT institutes are in the private sector; there are limited resources in the public sector. However, in the absence of a public regulatory body, quality is often compromised. Also, these institutes cannot keep pace with the rate of change in the IT sector and it is difficult to find highly qualified trainers. Further they cannot cope with the demand. High school graduates from poor families and disadvantaged groups are forced to enter the work force prematurely. Their potential remains largely untapped.

Out-of-school poor youth are targets for IT training. Training and hiring of women in the IT sector also should be encouraged. Both rural and urban areas need to be tapped. Training these people in IT will help reduce unemployment.

Proposed Project

The objective is to impart quality IT relevant to industries where IT has changed the nature and requirement of jobs, so that affected persons can be usefully employed. Computer literacy will be taught in the context of a particular discipline rather than as a separate course, so that graduates can be usefully employed, for example as accountants in small businesses or family microfinance.

Methodology

The proposal envisages establishment of vocational centers in both rural and urban areas using e-learning combined with distance learning. Selection criteria for applicants will include equitable rural, urban, and regional distribution or representation. The operation of the centers will be controlled and supervised by the respective provincial authorities. However, the central Government will be consulted when designing course content. Recurring expenditures for maintenance and operations need to be reflected in the provincial governments' education budget. A subsidized fee is suggested to meet daily expenditures, which will be paid by the participants in order to inject sense of ownership. Scholarships or fiscal incentives could be considered to attract the very poor and women.

Implementation Arrangements

The centers will run two shifts in order to accommodate all members of the community, including senior citizens, farmers, or fully employed persons who wish to acquire IT skills. Community involvement is key to ensure security of the infrastructure. Training modules will be designed in close coordination with Allama Iqbal Open University (AIOU) and Virtual University. AIOU, with its main campus at Islamabad and huge network of regional centers spread all over the country, has clientele all over Pakistan and in the Middle East. It is a distance education institution that provides multidisciplinary education from basic to doctoral level programs. Virtual University has already begun offering e-learning programs.

Project Framework

	Design Summary	Monitoring Mechanisms	Assumptions (A) and Risks (R)
Goal	Upgrade education and training throughout the country for all sectors of the community, using IT	Steering committee at the state level	Political stability in the country
Purpose	To introduce computer literacy, e-learning, and vocational training	Periodic meetings of all stakeholders	Strong commitment at the central, provincial, and local level
Outputs	E-learning programs in vocational centers	Project management team	Large numbers of students are enrolled Timely payment of fees by the students Patronage of local leaders
Activities	Formal and informal computer literacy lessons and e-learning for all sectors of the community, including unemployed youth, senior citizens, and women	Project management team	Coordination between stakeholders Active participation by the community

Cost Estimates and Financing Plan for 100 Centers (US\$ million)

Item	Total Cost	Government Share	Private Partner Share	ADB Share
1. Consultants	0.05			0.05
2. Equipment and Software	3.33		3.33	
3. Buildings and Furniture	1.67	1.67		
4. Training and Payment to Teachers	0.80			0.80
5. Seminars, Surveys, and Travel	0.03			0.03
6. Resource Material and Stationery	1.67			1.67
7. Contingencies (5%)	0.38			0.38
Total	7.93	1.67	3.33	2.93

Source: Participant's estimates.

Philippine Workforce Development in Tertiary Education through an E-Competency Center

Teresita I. Barcelo

Introduction

The Philippines has many initiatives to digitize government services, integrate computer use in basic education, and provide PCs in public elementary and high schools. At the tertiary level, universities and colleges have made efforts to offer courses/programs in computer science. However, their efforts are uncoordinated and government policies still need to be firmed up.

ICT is included in the 10-point agenda of the President, who recently upgraded the Information Technology and e-Commerce Council to the Commission on Information and Communication and Technology. Thus, this is an opportune time to develop e-learning in the country.

Proposed Project

Content. The project will develop both nonformal training courses and formal education programs in ICT-related subjects.

1. Nonformal, short courses:

- Basic training on IT literacy for teachers (basic and tertiary levels)
- Orientation training for school/university administrators
- Online teaching and learning for teachers and tutors
- Training for instructional designers
- Training for media specialists

2. Formal program (postgraduate degree):

- Certificate in Educational Technology
- Master of Education (Instructional Design)

Delivery. It is envisaged that the content can be delivered online, by online consultation with tutors, online collaborative projects with other learners, and short-term face-to-face sessions.

Program Requirements. Apart from computer hardware and software and connectivity (Intranet and Internet), the project will require a building for training, equipped with a computer laboratory, small workshop rooms, an audio-visual room, and library. Staffing will include facilitators, consultants, administrative personnel, executive director, content developers, media specialists, instructional designers, language editor, and technical staff.

Implementation Arrangements

A needs assessment will be made of teachers, media specialists, instructional designers, and content developers. The state of the art of technological resources available locally and abroad will be determined; links will be made with international organizations; vendors' products will be surveyed; and applicable international standards will be reviewed. Selected scholars will be sent as fellows for a graduate degree in educational technology and instructional design. After graduation, they will develop curricula for graduate degrees (1-year certificate program and 3-year Master's program). Experts will be invited to help develop training curricula and materials.

A pilot run of training programs, including documentation and evaluation of outcomes, will then be made. After assessment, feedback, and refinement of materials in cooperation with experts and stakeholders, the program will be introduced at full scale. Continuous feedback and monitoring of the project will be put in place.

Cost Estimates for the First 5 Years (US\$ million)

Item	Cost
1. Buildings and Furniture	1.00
2. Personnel Salaries	0.40
3. Scholarships and Fellowship Training, 4 Persons	0.24
4. Maintenance and Other Operating Expenses	0.10
5. Materials Development	
a. 5 courses nonformal	0.06
b. 10 courses, formal	0.12
c. copyright/license	0.10
Total (5 years)	2.02

Source: Participant's estimates.

ICT Core Competency Center in the Philippines

Ma. Lourdes P. Aquilizan

Introduction

The success of e-governance and the Government Information Systems Plan (GISP), the flagship programs of the Philippine Government, depends on the availability of a critical mass of ICT professionals as well as extension workers and teachers.

Under the national IT plan, the National Computer Center (NCC) as the focal institution for IT in the country must be strengthened. This involves strengthening the National Computer Institute (NCI), NCC's training arm, to service the Government's ICT training needs effectively and efficiently. There is a need to keep the NCI upgraded and updated on recent developments in ICT courseware delivery to transfer the technology to the greatest number of Filipinos.

The chronic problem of lack of trained personnel can only be remedied by having a continuous program of training. The Information and Communications Technology Core Competency Center project aims to build a critical mass of ICT professionals and extension workers who will spearhead the country's efforts to implement e-governance and the GISP. The project will augment and expand NCI's present ICT human resource development capability and capacity.

Issues

ICT Workforce (government and private sectors)

- A recent survey revealed that the overall state of the ICT workforce has deteriorated significantly since 2000.
- The skills of ICT personnel differ widely, depending on their academic environment, learning attained, and application of knowledge.
- There is a general lack of well-trained and competent teachers in ICT-related subjects, contributing to the decline in the quality of ICT workers.
- Training of teachers in ICT-related subjects is in need of upgrading.
- Agencies and companies must retrain existing ICT employees, adding significant costs to their operations.

- New ICT graduates usually need additional training (at least 6 months) to become productive.

E-learning

- E-learning is in its infancy in the Philippines, but it holds promise of becoming an important part of the education and training process.
- There is a need to use e-learning technology to support traditional education and training.
- Effective implementation of e-learning requires expertise that is in short supply in the Philippines.

E-government

- Less than 10% of the total government personnel are ICT knowledgeable; about half are data encoders and computer operators; only a few are programmers, systems analysts, or IT officers/managers. Most government personnel do not use computers.
- Variety in the size and nature of the ICT staff in government agencies partly accounts for the varying levels of computerization efforts.
- There is a need for massive training to upgrade existing ICT personnel and retool existing staff for ICT functions.
- Agency heads need to be educated about ICT to raise their appreciation level its use in improving workplace processes, policy formulation, and administration.
- Generally, computerization in local government units is mostly for clerical tasks.

Proposed Project Purpose

The overall goal of the project is to help create and sustain a critical mass of ICT professionals in government, whose competencies are at par with international standards, to ensure the implementation of e-governance to serve the citizenry better.

Output and Key Activities

The main outputs of the project will be improved capability and quality of institute staff; ICT-related and e-learning online courseware; multimedia laboratories and facilities fully and effectively used; e-learning policies, guidelines, and standards; and institute e-learning policies, guidelines, and standard operating procedures.

Cost Estimates and Financing Plan for 5 years (US\$ million)

Item	Government Share	Donor Share	Total Cost
1. Consultants			
a. International		0.20	0.20
b. Domestic		0.33	0.33
2. Equipment and Software			
a. Equipment		0.25	0.25
b. Software		0.25	0.25
3. Building and Furniture			
a. Building	0.54		0.54
b. Furniture	0.01	0.00	0.01
4. Training, etc.		0.03	0.03
5. Research and Development		0.01	0.01
6. Administration and Support Costs	0.92	0.48	1.40
7. Contingencies	0.15	0.15	0.30
Total	1.62	1.70	3.32

Source: Participant's estimates.

Implementation Arrangements

The NCC will be the lead implementing government agency. Its NCI is in the best position to implement the project, using existing alliances and partnerships with government agencies, academe, and the private sector.

Benefits of the Project

The project will augment and expand NCI's present ICT human resource development capability and capacity by allowing anytime-anywhere access to its ICT courses. It will be especially useful for government ICT professionals—both in capital cities and in remote areas—who have difficulty attending classes because managers and supervisors are reluctant to send staff for training if it means significant absence from the workplace.

Project Framework

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
Goal	<p>Help create and sustain a critical mass of ICT professionals in the government (metropolis and region-based), whose competencies are at par with international standards, to ensure the implementation of e-governance to serve the citizenry better</p>	<ul style="list-style-type: none"> • Increase in number of ICT professionals, extension workers, and teachers • Level of satisfaction with ICT courses of ICT professionals, extension workers, and teachers • Number of participants who benefit from ICT courses • Level of satisfaction of citizenry in the delivery of public services 	<ul style="list-style-type: none"> • Results of interviews with and questionnaires to supervisors/managers of individuals participating in online courses • Results of interviews with and questionnaires to participants of online courses • Post-online course evaluation report • List of persons certified by the institute. • Elimination of long queues due to presence of web-enabled transactions 	<p>Support/fund availability</p>
Purpose	<p>Develop highly skilled ICT professionals, extension workers, and teachers</p>	<ul style="list-style-type: none"> • Increase in the number of ICT-competent/literate government employees (national and local), extension workers, and teachers • Increase in the number of online courses offered by qualified institutions 	<ul style="list-style-type: none"> • Results of interviews with and questionnaires to participants to online courses • Number of online courses implemented 	<ul style="list-style-type: none"> • Government agencies continue to allow their employees to enroll in the online courses

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Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
	<ul style="list-style-type: none"> Increase in the number of certified ICT workers Increase in production, with enhanced and more efficient transactions Increase in ratio of personnel to computers Increase in the number of non-ICT personnel performing ICT-enabled functions 	<ul style="list-style-type: none"> Strengthened institute staff Presence of ICT-related and e-learning online courseware Documentation of courseware Functional multimedia laboratories E-learning policies, guidelines, and standards Smooth management and conduct of online courses Number of online courses accessed and number of participants per course 	<ul style="list-style-type: none"> Number of developed or upgraded online ICT courses delivered Number of institutions offering ICT-related online courses Results of the Annual ICT survey in the Government conducted by NCC 	<ul style="list-style-type: none"> ICT professionals, extension workers, and teachers utilize/apply the skills and expertise obtained from the online courses Financial sustainability of the project
Outputs	<ul style="list-style-type: none"> Capability and quality of institute staff developed/enhanced ICT-related and e-learning online courseware developed Multimedia labs set up and facilities fully and effectively utilized e-learning policies, guidelines, and standards developed/formulated 		<ul style="list-style-type: none"> Number of project staff trained Amount of ICT-related and e-learning online courseware Amount of equipment and other computing resources Degree of laboratory utilization and equipment/facilities maintenance 	<ul style="list-style-type: none"> Project fund Sustainability of the project (financial, personnel, facilities) NCC management support

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Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
	<ul style="list-style-type: none"> Institute e-learning policies, guidelines, and standard operating procedures developed 		<ul style="list-style-type: none"> Documentation of e-learning policies, guidelines, and standards Record of institute operations, implementation of online courses, etc. (Accomplishment reports) 	
Activities	<ul style="list-style-type: none"> Capability and capacity building of institute staff Setting up of project management office Identification of online courses to be developed and implemented Design and development of online courses 	<ul style="list-style-type: none"> List of institute staff training events Online course design and development standards Number of online courses List of laboratory equipment, facilities, applications, and devices for the multimedia laboratories Research studies on e-learning policies, guidelines, and standards Documentation of institute e-learning policies, guidelines, and standard operating/management procedures 	<ul style="list-style-type: none"> Certificates of training attended by institute staff Special order on creation/organization of project management office Specifications of multimedia laboratories 	<ul style="list-style-type: none"> Project fund NCC management support

continued next page

Project Framework (cont'd.)

	Design Summary	Performance Indicators/ Targets	Monitoring Mechanisms	Assumptions and Risks
	<ul style="list-style-type: none"> • Setting up multimedia laboratories • Research on and formulation of e-learning policies, guidelines, and standards • Formulation of institute e-learning policies, guidelines, and standard operating/management procedures • Design and development of an e-learning institute web site and logo • Development of an action plan for implementation of the project 	<ul style="list-style-type: none"> • Institute logo and web site • Project implementation action plan 	<ul style="list-style-type: none"> • Approved documents for online course design and development standards; institute e-learning policies, guidelines, and standard operating/management procedures; and project implementation action plan • Design and development schedule with specifications of institute logo and web site 	

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SchoolNet in Sri Lanka

Anura Dissanayake

Introduction

Although Sri Lanka's literacy level is 92%, computer literacy level is far behind at less than 5% of the country's population. In early 2002, the Government initiated the e-Sri Lanka project as a result of the launching of an ambitious ICT road map for the country.

The ICT road map contains five strategies:

- using ICT as a key lever for economic and social development,
- building implementation capacity,
- building national information infrastructure and an enabling environment,
- developing ICT human resources, and
- e-government to deliver public services.

The Ministry of Education has been entrusted with harnessing ICT and the Internet for the country's future human resources. To accelerate the pace of education reforms to meet the challenges of the knowledge age, a plan was launched in 2001. One of the focal areas of the plan is to develop a pool of highly qualified human resources equipped with ICT skills necessary for a knowledge-based work environment through secondary and higher education.

The Secondary Education Modernization Project (SEMP) was set up in 2001 and funds were also provided through the General Education Project 11 in 2003 to strengthen the school system to facilitate ICT education in the country. Both projects are currently installing computer learning centers (CLCs) in 1,400 of Sri Lanka's 2,300 type 1A, B, and C schools throughout the country. Each CLC is a self-contained and secure air-conditioned computer laboratory containing 10–20 computers. CLCs support both learning of IT skills and subject-specific learning through computer-aided learning software. About 1,200 are expected to be in place by the end of 2004.

Issues

A study was carried out toward the end of 2003 of principals, teachers, and students in 21 of the 200 schools that had CLCs at that time, as part of the ongoing monitoring of this special project.

The principals were open to exploring ways of generating income to sustain the CLCs. About 90% of them wanted to make their CLC available outside school hours and widen community access if users paid a small fee. Principals also overwhelmingly believed that private sector involvement in the operation of the CLC should be encouraged if it benefited the school. Further, the great majority believed that school leavers could be used to help with the running of the CLC.

Teachers were generally favorable to the introduction of computers, IT skills, and computer-aided learning (CAL). In fact, teachers said more CAL materials were needed. They felt that CAL encouraged students to learn independently, although they (like the principals) did not think that Sri Lanka was ready for student self-learning and computer-based self-testing by students.

The biggest problem with CLCs, identified by both principals and teachers, was the lack of trained instructors. This situation has been partly addressed by SEMP since the survey was conducted; the project now arranges training in IT skills for 12 teachers from each school with a CLC. This training is an 18-day program carried out by private trainers, using courses that are assessed and validated by the project.

The survey revealed that students in CLCs were wholly in favor of IT. They enjoyed acquiring IT skills, not least because they unanimously believed that IT enhances their employment prospects. The vast majority of students considered that IT has made school more interesting for them.

Some students felt that more training in basic "office" software could be given. However, given that the CLC may have to serve the needs of hundreds of students, it is obvious that some students will feel they do not get enough time with the computers. Despite this, CLCs are overwhelmingly popular with staff and students and are being productively used by most of the schools.

In schools with an effective CLC, it has been found that attendance at classes in the CLC has been 100% or very near. Moreover, both teachers and students arrive punctually for lessons there.

Only around half the CLCs are using computer-aided learning software. There has been a delay in delivery of quality home-produced software, and the NIE is being strengthening in this respect. The most popular educational software currently in use in the CLCs is the CD-ROM encyclopedia. It is sometimes used by teachers, who copy items and paste them in restructured ways into new documents to create supporting material for their lessons. These findings revealed that the school system needs regular supply of software and educational tools.

Proposed Project Purpose and Output

It is proposed to introduce a national network, SchoolNet, which will accelerate technology-based modernization of the education system and schools. Such networks have helped many nations in the region to address the digital divide by mobilizing the ICT sector to reduce telecom costs and also offer free Internet connections through various arrangements. SchoolNet has led to increasing the number of schools that can connect to the Internet by telephone; lowering student-computer and teacher-computer ratios; and enhancing the accessibility of teachers and students to computers through more open-access areas and local-area and wide-area networking in thousands of schools in the Asia and the Pacific region. Because such networks have already proven highly successful, it is proposed to introduce the system nationwide instead of piloting.

Implementation Arrangements

An enabling environment has been created through government policy that encourages integration of ICT and Internet/intranet tools into the learning environment. Also, efforts are being made by the Government to extend the bandwidth to enable broadband connections for the CLCs. The private sector is actively engaged in content creation, courseware development, and delivery systems.

Benefits of the Project

It is estimated that the school system of Sri Lanka will produce 2,000,000 computer-literate, young people for its labor force in the next 4 years. This is the most quantifiable and probably the most useful benefit of SchoolNet. SchoolNet will also establish an ICT vision across the entire education system. SchoolNet is easy to set up, is innovative, and can react quickly.

Project Framework

	Design Summary	Monitoring Mechanisms	Assumptions and Risks
Goal	Setting up SchoolNet to address technology issues, curriculum integration processes, assessment and pedagogy, professional development of teachers, development of suitable content and software, and creating online communities of practice using ICT	<ul style="list-style-type: none"> • Annual school results • Labor market surveys • Response of industry 	<ul style="list-style-type: none"> • Expanded bandwidth • Uninterrupted political commitment • Stability of country's political situation
Purpose	To create a large pool of knowledge human resources	<ul style="list-style-type: none"> • Number of students • Labor statistics 	Students will complete secondary education cycle
Outputs	Enhanced/knowledgeable human resources in every field of the labor market: a) people with skills in the fields of science and math with relevant soft skills in ICT, b) people with skills in system administration and programming, c) people with skills in social sciences with required soft skills and management, and d) people with skills in business and related abilities	<ul style="list-style-type: none"> • Periodical surveys and inspections • Statistics of the annual report of the Central Bank 	<ul style="list-style-type: none"> • Awareness created among all sections of the society • Sufficient budget • ICT effectively used across society
Activities	a) Planning, designing, infrastructure, and delivery mechanisms b) Content development c) Research and development d) Development of an assessment system e) Developing linkages f) Online system networking	Establishment of effective planning and monitoring software	<ul style="list-style-type: none"> • The Ministry of Education can attract high-quality personnel to carry out tasks assigned • The Ministry of Education can establish effective partnerships with private sector service providers • Adequate connectivity and bandwidth are available
Inputs	a) Personnel to develop curricula b) Web designers c) Teachers/trainers d) Management staff	<ul style="list-style-type: none"> • Amount of software produced • Number of modules developed • Quality of products based on accepted standards 	<ul style="list-style-type: none"> • Provision of adequate funds • High quality delivery

ICT = information and communications technology.

Cost Estimates and Financing Plan (US\$ million)

Item	Government Share	Donor Share	Total Cost
1. Consultants			
a. International	0.00	1.00	1.00
b. Domestic	0.00	0.50	0.50
2. Equipment and Software			
a. Equipment	0.50	1.50	2.00
b. Software	0.00	1.00	1.00
3. Buildings and Furniture	0.50	0.50	1.00
4. Training, Seminars, and Conferences	2.00	2.00	4.00
5. Research, Development, and Surveys	0.00	0.50	0.50
6. Miscellaneous Administration and Support Costs	0.50	1.00	1.50
7. Contingencies	0.35	0.80	1.15
Total	3.85	8.80	12.65

Source: Participant's estimates.

E-Services through Vidhata Resource Centers in Sri Lanka

H.P. Somathilake

Introduction

Sri Lanka is a welfare state. The Government provides free education, free health, and free social services. Nevertheless, nearly 50% of the population can be considered poor, and more than one third live in absolute poverty. The majority of the poor are in rural areas, where unemployment and underemployment are highly significant.

The proposed project is to improve the delivery of public services through establishment of e-Vidhata resource centers (e-VRCs). The Divisional Secretary's division will be the focal point of the project. The aim is to improve living conditions of the rural poor who have not yet been reached by public services.

Issues

The urban-rural gap is a major issue: development technologies, farming techniques, etc., do not flow into rural areas systematically. Also, farmers are not aware of market prices and sell their products too cheaply. Thus, farmers do not get adequate benefits from their labor.

The lack of coordination at the provincial, district, and divisional levels means that developments in urban areas do not trickle down to needy people and needy areas. Access to resources, facilities, and services is very limited in rural areas. Rural roads, rural schools, and rural hospitals are substandard. Telecommunications and electricity facilities are lacking in most villages.

Proposed Project Purpose and Output

The establishment of e-VRCs would enable relevant technologies to be transferred to needy areas electronically. All public services could be provided electronically through e-VRCs and each would be a community center, which would help solve technical problems and provide advisory services.

Public sector activities could be coordinated through this mechanism. At present, divisional officers are heavily involved in carrying out routine work, such as issuing licenses and permits, and conducting interviews; they do not have time to introduce development proposals or carry out development activities. At an e-VRC, people could fulfill most of their needs, such as copying birth or marriage certificates, renewal of licenses, information on labor markets and vacancies, and weather news. The centers would also provide extension services through the Internet or CD-ROMs. They would serve to increase the e-literacy rate among rural people, especially youth and women.

Benefits of the Project

About 72% of the rural population would directly benefit from this project, especially farmers, unemployed youth, and women, in terms of public services, employment, and e-literacy.

Project Framework

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal To improve socioeconomic conditions of the rural poor</p>	<ul style="list-style-type: none"> • School dropout level • Malnutrition level • Housing conditions 	Surveys and studies to assess conditions	All governments continue this program
<p>Purpose</p> <ul style="list-style-type: none"> • Improve the income capacity of the rural people 	<ul style="list-style-type: none"> • Number of technologies transferred • Number of services delivered 	Saving capacity	People use only e-VRCs for relevant information
<p>Outputs</p> <ul style="list-style-type: none"> • Full-fledged e-VRCs in each division • Knowledgeable farmers • Increased e-literacy rate, from 1% to 15% within 5 years 	Number of divisions with centers	<ul style="list-style-type: none"> • Strength of farmer organizations • Number of participants in programs and persons visiting the centers 	
<p>Activities</p> <ul style="list-style-type: none"> • Provide computer, Internet, and other relevant facilities • Identify all technologies relevant to an area • Train government staff in each division • Awareness programs for communities • Formation of science and technology societies 	Development of project planning matrix with objectively verifiable indicators	<ul style="list-style-type: none"> • Numbers of persons trained, aware of services • Presence of science and technology societies 	Adequate, quality human and capital resources available
<p>Inputs</p> <ul style="list-style-type: none"> • Construction of 320 e-VRCs • Computers, software, and facilities provided • Staff 			Funding by the Government and donors

e-VRC = e-Vidhata resource center.

Cost Estimates and Financial Plan for 320 e-VRCs (US\$ million)

Item	Government Share	Donor Share	Total Cost
1. Consultants			
a. International Consultants		0.12	0.12
b. Domestic Consultants		0.22	0.22
2. Equipment and Software			
a. Equipment (10 computers and peripherals)		3.20	3.20
b. Software		0.03	0.03
3. Buildings and Furniture			
a. Buildings - renovations	0.03		0.03
b. Furniture	0.10		0.10
4. Training, Seminars, and Conferences	0.10	0.90	1.00
5. Research, Development, and Surveys	0.05		0.05
6. Miscellaneous Administration and Support Costs	0.07	0.10	1.17
Total Base Costs	0.35	4.57	4.92
7. Contingencies (5%)	0.10	0.23	0.24
8. Recurrent Costs	0.15		0.15
Total Cost per e-VRC	0.60	4.80	5.40

Source: Participant's estimates.

Teacher Training Centers Network in Tajikistan

Albina Kamaletdinova

Introduction

Following the collapse of the Soviet Union in 1991, the Republic of Tajikistan became a sovereign state. Unfortunately, the country has not been able to fully use the advantages and benefits of independence. External and internal forces used socioeconomic and political problems, accumulated over several decades, to unleash civil war. As a result, thousands died, many were forced to leave their country and the economy and sociocultural environment suffered great losses.

Tajikistan ranks 103rd place among 174 states in terms of the human development index. At present, the majority of the population lives at or below the poverty line. Poverty—determined by level of income and consumption, and access to education, health care, water supply, various energy resources, transport, and mass media—affects vulnerable groups. Poverty incidence is highest in rural areas and among those

without secondary and/or higher education. Due to the lack of public resources, access to education, including basic education, for the poor has declined. Informal payment for educational services is widespread. During the Soviet period, almost 100% of the population had access to education. At present, the quality of education in general, especially in the rural areas, is low.

In November 2003, the State's strategy "Information Communication Technologies for Developing the Republic of Tajikistan" was created. In the area of education, it includes the following points:

- using IT in education and knowledge management,
- providing of computer literacy,
- developing standards in all levels of educational facilities,
- deployment of computer-based education technologies,
- 100% school computerization, and
- creating public nodes with free access to the Internet for people of low income.

The need for a teacher training centers network (TTCN) is the result of the geographical landscape of the country and low standard of living. It is almost impossible for many people to leave their communities to obtain special education. There has also been a decrease in attendance of primary and secondary schools and in the quality of education. Few rural areas are covered by the local Internet service providers because of little or no paid demand.

At present, numerous private centers exist to teach job skills using personal computers, taught by experts from other institutions. Pedagogical high schools in the country do not prepare qualified teachers to use ICT. There is no single public e-learning center in Tajikistan at the moment. The only academic network on distance education does not use ICT.

Issues

The basic problem addressed by the project is the lack of infrastructure in the country, which in turn is connected to economic complexities experienced since independence.

The project is a first step in education reform in Tajikistan. There were fewer secondary school places in 1999 than in 1990, while during

that period the school age population increased by 12%. There is also a shortage of teaching staff. Many of those not attending school are from poor households; they cannot afford the cost of education, including clothes, shoes, textbooks, and informal payments to teachers. This also applies to preschool: 30% of girls and 20% of boys from poor families do not attend preschool.

International organizations have been supporting projects related to providing computer literacy for needy segments of the population in accordance with the Government's policies, as shown in the matrix below.

Objective

The basic purpose of the project is to improve the level of teacher qualifications by raising the level of accomplishment among the teaching population, including women. The present decline in standards is closely connected to consequences of the civil war. The

Government Policy Matrix

Measures and Actions	Implementation Period	Bodies Responsible	Indicators
Providing schools with textbooks, modern teaching equipment, and other teaching resources (including e-learning technology)	2002–2006	Ministry of Education (supported by the World Bank and Asian Development Bank)	<ul style="list-style-type: none"> • Proportion of students with textbooks • Number of schools being re-equipped • Proportion of schools provided with e-learning
Revising curricula and programs	2002–2005	Ministry of Education (supported by the World Bank and Asian Development Bank)	<ul style="list-style-type: none"> • Number of revised curricula and programs • Increase in literacy
Introduction of new models of teacher training and improvement	2002–2005	Ministry of Education (supported by the World Bank and Asian Development Bank)	<ul style="list-style-type: none"> • Accessibility of rural teachers to a system of qualification improvement and retraining • Number of qualified teachers

Cost Estimates and Financing Plan for One Center (US\$)

Item	Cost per Unit	Quantity	Total Cost
Capital Expenses			
1. Computer	1,000	20	20,000
2. Network Equipment (installation included)		1	3,000
3. Satellite Equipment (installation included)		1	2,000
4. Diesel Generator	2,000	1	2,000
5. Furniture	400	5	2,000
6. Special Software			6,000
Operating Expenses (one year)			
1. Buildings	100	12 months	1,200
2. Fuel			312
3. Fuel Delivery			100
4. Utilities	30	12 months	360
5. Salaries			
a. Head of Center	200	12 months	2,400
b. Technical Staff	150	12 months	1,800
c. Guards (2)	100	12 months	1,200
d. Cleaner	50	12 months	600
Total			42,972

Source: Participant's estimates.

elimination of gender barriers in education in professional training of girls and women is another purpose of the project.

Activities

- Creation of two core centers for electronic training in Dushanbe and the creation of 9 public centers in the most remote regions: Hudjand, Khorog, Pendjikent, Pyandzh, Shaartuz, Ishkashim, Murgab, Boldzhuvan, and Vorukh, with support of uninterrupted connection via satellites.
- Development of basic educational courses of various levels.
- Development of methods of certification of education programs.
- Training of experts from all regions in which opening of e-learning centers is planned.

The project consists of four phases:

- Phase 1 (12 months): Research, development of the concept, and specifications.
- Phase 2 (12 months): Creation of the ICT infrastructure and software/hardware tools.

Cost Estimates and Financing Plan for the TTCN
(Creation of 10 centers and maintenance for 5 years) (US\$ million))

Item	Government Share	Donor Share	Total cost
A. One-time Expenses			
International Consultants		1.000	1.000
Computer Equipment		0.200	0.200
Network Equipment		0.100	0.100
Satellite Equipment		0.100	0.100
Diesel Generator (8 centers)		1.000	1.000
Furniture		0.010	0.010
Special Software		0.100	0.100
Subtotal	0.000	2.510	2.510
B. Operating Expenses (one year)			
Domestic Consultants for Network Support		0.500	0.500
Buildings	0.100		0.100
Fuel (8 centers)		0.010	0.010
Fuel Delivery (8 centers)		0.006	0.006
Utilities		0.030	0.030
Salaries		0.040	0.040
Satellite Channel with Internet Access (shared between 10 centers)		0.050	0.050
Contingencies		0.001	0.001
Subtotal	0.100	0.637	0.737
Subtotal for 1 year (A + B)			3.247
Total (5 years) (A + 5 x B)			6.195

Source: Participant's estimates.

- Phase 3 (12 months): Design, programming, testing, validating information content, translation of information materials, and launching of the system.
- Phase 4 (12 months): monitoring, evaluating, and reporting.

Benefits of the TTCN

Results of this project will include improving teachers' qualifications, eliminating computer illiteracy, increasing the educational level of the population, eliminating gender barriers for girls and women, simplifying the process of education, and overcoming the digital inequality between urban and rural populations.

E-Learning for Basic Education in Thailand

Suwat Subtrisul

Introduction

Thailand intends to expand basic education to all children aged 6–17 years, of which there are about 11 million. At present, about 90% of them have access to education and about 90% of these are taught through the Office of the Basic Education Commission (OBEC). There are about 450,000 teachers in 32,000 schools under OBEC. Presently, teachers' salaries take up 83% of the budget. Many schools still lack teachers in all subjects, and their salaries are low compared with the cost of living in the country. The academic output of students does not satisfy public opinion. Many projects have been created to address this problem, but the situation does not improve. Many government agencies want to use e-learning technology to make education more efficient and to scale-up the quality of education in each school.

Issues

The issues of education in Thailand pertain to the coverage of basic education in remote areas and the low quality of education, especially in mathematics, science, and English language. About one third of schools lack teachers, according to the number of classes and desired quality of educational output. The issue of quality relates to many educational components, such as curriculum, qualification, and the student-teacher ratio. Teaching-learning educational reform aims to overcome these issues, but the problem of training large numbers of teachers in pedagogy remains.

Proposed Project Purposes

- Every teacher will be trained to integrate ICT into pedagogy and will have the potential to construct digital content.
- All children aged 6–17 years will be able to access standard quality education with minimal effort.
- Education will be available to all children, with variety of knowledge content suitable for their different interests.

Methodology and Key Activities

Implementation will be phased. Content development and teacher training are required from the beginning. A prototype center will be designed and a pilot program implemented to make sure the technology and components are suitable. In all, 20 e-learning centers will be established around the country according to the 5 main subjects (mathematics, science, English, ICT, and social studies) and 4 regions of the country (Central, Northern, Northeastern, and Southern). The centers will take responsibility to coordinate and manage subject areas, and to collect and distribute subject materials to schools.

Project Framework

	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
Goal	20 centers and 2 million students in the e-learning system	<ul style="list-style-type: none"> Scheduled plan recording 	Policy remains supportive
Purpose	Detailed plan and targets	<ul style="list-style-type: none"> Plan evaluation 	Suitable strategies
Output	Number of schools and students in the system	<ul style="list-style-type: none"> Suitable courses Digital libraries 	Funding availability
Activities	Workshops and seminars	<ul style="list-style-type: none"> E-learning at learning centers and home 	
Inputs	Resources, staff, and budget allocation	<ul style="list-style-type: none"> Hardware for each student Access 	

Cost Estimates and Financing Plan (US\$ million)

Item	Government Share	Donor Share	Total cost
1. Consultants			
a. International Consultants		0.50	0.50
b. Domestic Consultants		0.50	0.50
2. Equipment and Software			
a. Equipment	5.00	200.00	205.00
b. Software		5.00	5.00
3. Training, Seminars, and Conferences	2.00	2.00	4.00
4. Research Development Confirmation		1.00	1.00
5. Administration and Support Costs	1.00		1.00
6. Contingencies	6.00		6.00
Total	16.00	209.00	223.00

Source: Participant's estimates.

SchoolNet in Turkmenistan

Jennet Permanova

Introduction

The Turkmenistan Government's main objective in the IT sector from the perspective of reducing poverty is to ensure access to basic education for everyone and to balance student ratios in secondary education.

Turkmenistan inherited a well-developed network of educational institutions and corresponding teaching personnel from the past, with a high enrollment ratio and gender parity through compulsory basic education.

Today, schools mostly apply the curriculum and programs from the Soviet period, which have not been adapted to the different demands of a market-oriented system, partly due to a lack of funds. The absence of modern IT in teacher training institutions limits the possibilities of using modern teaching methods, such as e-learning. The departure of specialists from the sector and the absence of ties with international education centers have also restricted work on developing a modern curriculum.

Issues

To reverse the decline in the education system, the Government has to address such problems as lack of resources, outdated curriculum, and outdated teaching methods. Funds are needed to re-equip schools with textbooks and teaching materials, raise teachers' salaries, improve teacher training, and help update the curriculum.

The main purpose of an e-learning system in Turkmenistan is the creation and development of an educational information environment that provides unity of educational space in the country and improves quality education. The main tool is to be SchoolNet, coordinated by the Ministry of Education.

Priority Tasks

The first need is for the formation of the infrastructure for an e-learning system, including (i) development of a legal base; (ii) creation of the information system; (iii) providing educational organizations

with modern computer equipment, software, and communications; and (iv) granting the educational organizations access to global information resources, including the Internet.

ICT can then be applied in the e-learning process, including (i) development of electronic educational works and creation of the educational information resource centers in regions of the country; (ii) training and retraining of administrative, technical, and scientific-pedagogical staff in the e-learning system; and (iii) development of technologies, software, and tools such that e-learning provides an uninterrupted education and self-education. It is hoped that all schools will be connected to the Internet by 2007 and that there will be one computer for every 35 pupils by the end of 2009.

Cost Estimates and Financing Plan for 5 years (US\$ million)

Item	Government Share	Donor Share	Total cost
1. Consultants			
a. International Consultants		0.50	0.50
b. Domestic Consultants	0.50		0.10
2. Equipment and Software			
a. Equipment		3.00	3.00
b. Software	0.10		0.10
3. Buildings and Furniture			
a. Buildings	1.00		0.20
b. Furniture		0.30	0.30
4. Training, Seminars, and Conferences	0.50		0.50
5. Research, Development, and Surveys	0.10	0.40	0.50
6. Miscellaneous Administration and Support Costs (teachers' salaries)		3.60	3.60
7. Contingency		0.50	0.50
Total	2.20	8.30	10.50

Source: Participant's estimates.

Benefits of the Project

The project will generate a unified e-learning educational system. It will raise the quality of training in educational organizations, including rural schools, by access to general educational resources, rational use of senior pedagogical staff, and by training experts in ICT for each school.

Also, the project will develop and introduce into the educational process modern e-learning materials and merge these with traditional means of training. Further, it will develop a system of open education,

including e-learning technologies, for primary and secondary schools. It will create a methodical system of support for teachers at all levels in educational institutions, through which to prepare and retrain pedagogical, administrative, and technical staff in ICT.

Designing E-Learning for Tomorrow's Education in Viet Nam

Lam Luu and Tran Quang Tien

Introduction

It is envisaged that by 2005, 4–5% of the Vietnamese population will have access to the Internet. There is a national project to connect rural areas to the Internet by 2008.

Internet activities in Viet Nam fall under Decree No. 21 CP of March 1997. This document provides principles and guidelines for the development of Internet services in the country.

The purpose of an action plan for 2005–2006 is to present ways and means of implementing the Government's e-learning initiative. The intention is to involve educators and trainers, as well as the relevant social, industrial, and economic sectors. It will improve employability and adaptability of the country's human resources, rectify the shortage of skills associated with new technologies, and improve social inclusion.

The action plan activities include technology education, research and development, e-learning solutions, design and implementation of e-learning, e-tools development, and e-content development.

The plan's software outputs include e-learning systems, design documents, implementation documents, sample e-courses in IT education, and training.

Other countries have also shown interest in Viet Nam's e-learning action plan. It is estimated to cost US\$200,000.

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